COTTON

Volume LXXXI
Number Six
Ten Cents a Copy

APRIL, 1917

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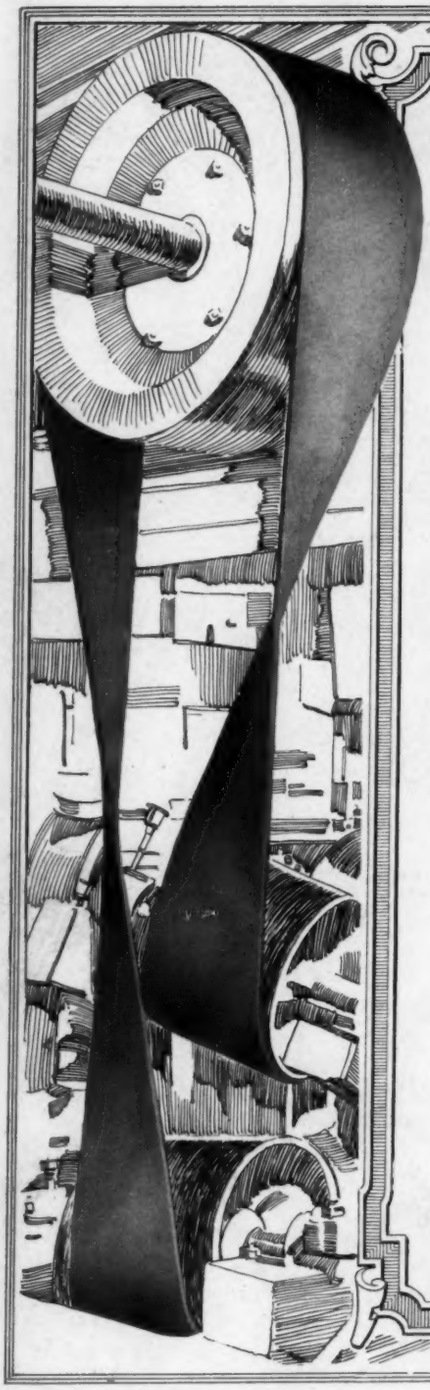

GRATON & KNIGHT
Standardized Series
LEATHER BELTING

Tanned by us for belting use

Graton & Knight bigness insures Graton & Knight uniformity

Graton & Knight Leather Beltings are uniform—Because Graton & Knight are the largest belt makers, because they purchase and tan 285,000 hides a year, because their brands are selected and graded to the highest degree of uniformity from this enormous supply of raw material. Uniformity is the most important factor in belting quality. A belt, like a chain, is no better than its poorest piece.

Only a big firm like Graton & Knight could establish and maintain an equal degree of uniformity in its belting.

And Graton & Knight are the largest leather belt makers in America.

This minute control of uniformity is possible only because of their large supply of leather tanned by them for belting use. A smaller supply would prove a constant temptation to put dissimilar pieces of leather into the same belt.

Graton & Knight hides are tanned in the Graton & Knight tannery, especially for belting purposes, by processes perfected in 53 years of belting tannage. It would be impossible for them to maintain equal uniformity if they used several different tannages.

Finally, Graton & Knight in the manufacture of their by-products use bellies, shoulders, and other parts of hides not suited for belting—there is no temptation to include these in Graton & Knight Belting.

* * *

This is why Graton & Knight can make a complete and standardized series of leather belting; and maintain so high and so fixed a degree of uniformity in each brand.

It is why Graton & Knight First Quality **means** first quality—absolutely free from any mixture of seconds, shoulders, or worse.

This is no time to experiment

with untried belting. High-speed production and continuous operation demand the **known** quality, the **proved** strength and ruggedness which have been built into Graton & Knight Leather Beltings for three generations.

The Graton & Knight Book on Belting is authority on modern belting practice. Write for a copy today.

The Graton & Knight Mfg. Company
Worcester, Massachusetts, U. S. A.

BRANCHES

Atlanta, Boston, Chicago
Cleveland, Detroit, Fall River
Kansas City, Minneapolis, New Orleans
New York, Philadelphia, Pittsburgh
Portland, Ore., St. Louis, Seattle
Leicester, Eng.

SELLING AGENTS

GRATON & KNIGHT MFG. CO., of Texas, Dallas, Texas.
GRATON & KNIGHT MFG. CO., of Wis., Milwaukee, Wis.
GRATON & KNIGHT MFG. CO., of Cal., San Francisco, Cal.

GRATON & KNIGHT

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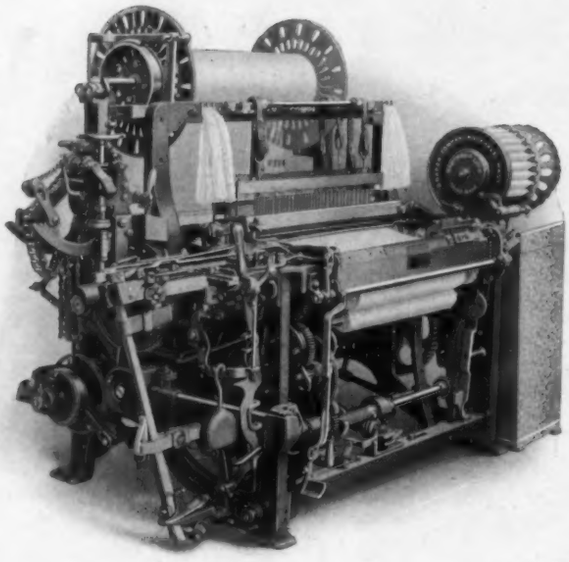

NORTHROP LOOMS

TRADE-MARK REGISTERED

**The Northrop
Turkish Towel Loom
illustrated above
saves more in proportion
than the Northrop Loom
on plain goods**

DRAPER CORPORATION

HOPEDALE MASSACHUSETTS

Southern Office
188 South Forsyth Street Atlanta Georgia

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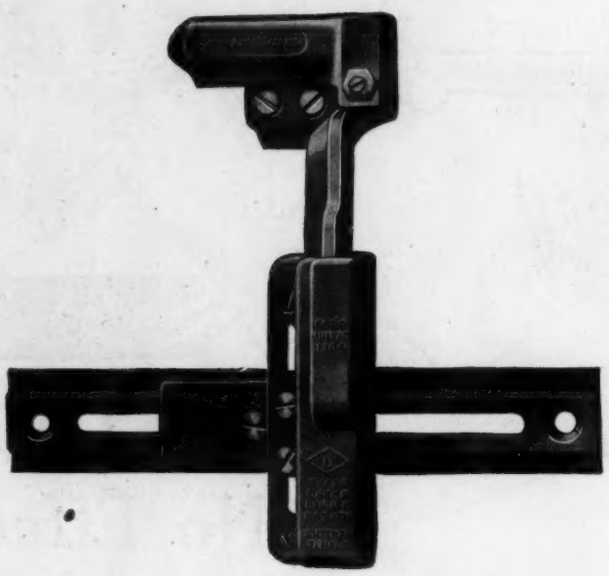
Dutcher Temples

Trade-Mark Reg. U. S. Pat. Off.



DRAPER CORPORATION

SOLE MANUFACTURERS

HOPEDALE MASSACHUSETTS

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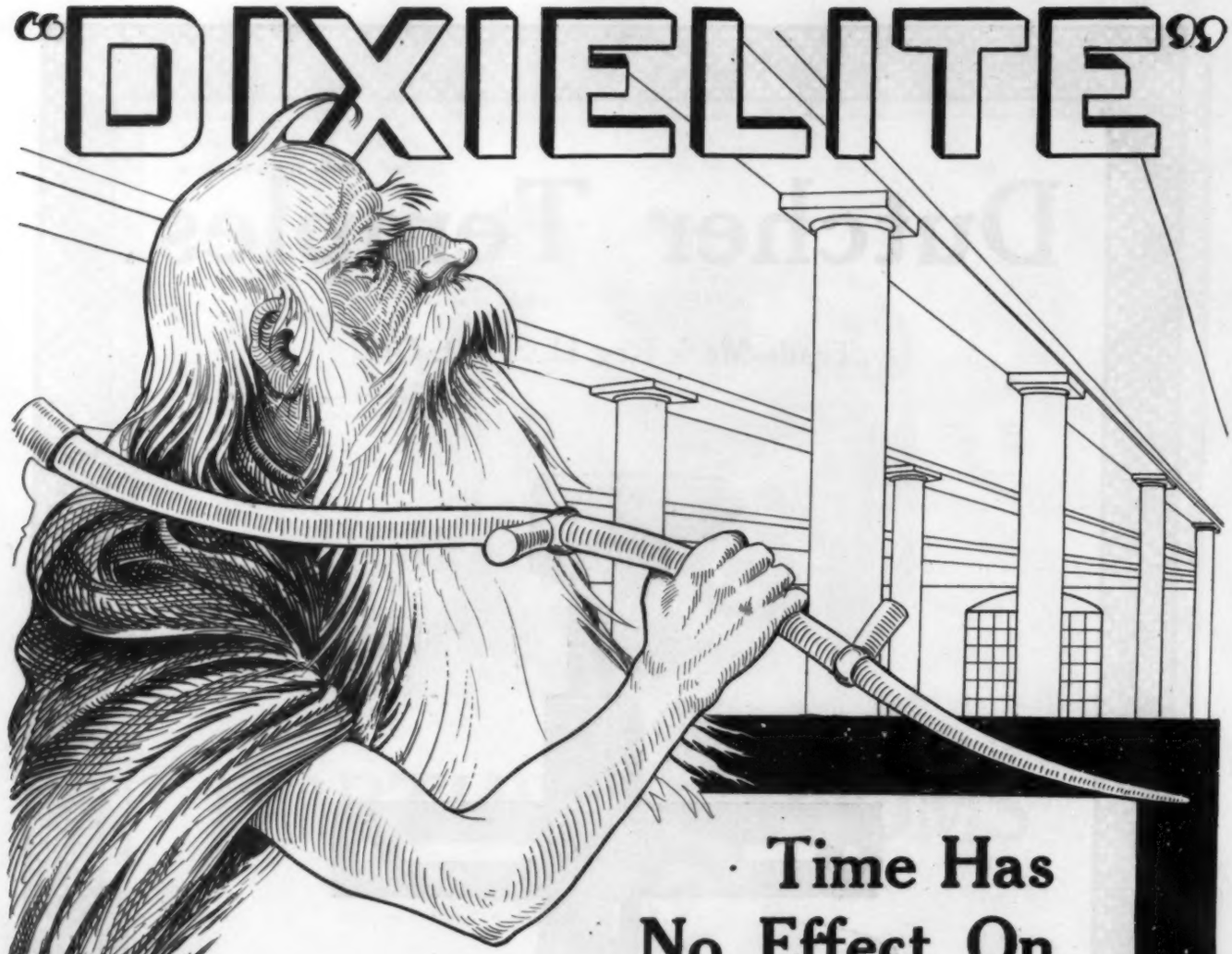
"DIXIELITE"



Time Has No Effect On "Dixielited" Walls and Ceilings

Have you noticed how Old Father Time changes those walls and ceilings coated with inferior oil-and-varnish white paints? Have you noticed how they yellow and peel and crack, and lose all value as a light-reflecting surface?

Old Father Time is very lenient with walls coated with "Dixielite."

"Dixielite" is not an imitation of anyone's mill white. It's a *PERFECTED* mill white that has behind it 65 years experience in paint making. You may have to pay a little more for it, but it's worth more to have a *lasting*, glossy-white, light-reflecting surface on your walls that is washable and sanitary. It's economical in the long run, and only one coat is needed over previously coated white walls.

On Cement or Brick surfaces use Bay State Brick and Cement Coating as a first coater for *"Dixielite."*

A sample of Dixielite sent free of charge for experimental purposes if interested. Demand "Dixielite" from your painting contractor. Send for sample panel today. Acquaint yourself with this superior Mill White. Different from the rest.

Wadsworth, Howland & Company, Inc.

139-141 Federal Street, Boston, Mass.

Makers of the Bay State Brick and Cement Coating.

BAY STATE

Right on Schedule Every Day!

UP THE HILLS—over hard grade crossings—through the sand and around the quick turns the "Hall" Truck swiftly moves your raw materials from the railroad to the mills—and your finished product back again.

"On schedule" dependable service—regularity of operation is a matter of certainty with

THE HALL TRUCK
2-3½-5 TON

Built to Cut the Cost of Your Heavy Haulage!

The "Hall" is built to carry your tonnage consistently every day of the year—the "Hall" provides you with a proven transportation system at a low first cost—and a minimum upkeep charge.

The motor is the standard Continental—the axles are Timken—the chassis frames themselves are forged and machined of the highest grade steel right here in our own plant.

The new "Hall" book "Speeding Up" is of particular interest to Textile Mill executives who are now ready to modernize their traffic plan. For your copy, without obligation—address

Lewis-Hall Iron Works
Mfrs. of the Hall Truck.
DETROIT, MICHIGAN
Established 1873

The Textile Mill's Promptest Protection Against Fire

Prepare to kill the blaze at the start. Use the simple and efficient protection now being adopted in all factories where inflammable materials mean unusual danger. Equip your mill throughout with Fyr-Fyter.

Fyr-Fyter NEVER FAILS

Approved by Underwriters Laboratories. Saves 15% on Auto Fire Insurance.

It is the weapon right at hand for every spark or blaze, including **electrical short circuits** and **gasoline fire.** Simple to operate; merely turn handle and pump—a few strokes and the fire is out. Its mechanical construction insures dependable operation **any moment—every moment—when you need it.**

Continuous stream without continuous pumping, panic-proof handle, and non-damagable mechanism are features which make it the **best** protection.

Let us tell and show you why many of America's largest manufacturers have equipped their mills with Fyr-Fyters. Full information on request.

The Fyr-Fyter Co., Dayton, O.

Interior Delph Spinning Mills—Philadelphia, Pa.—finished with ARCO-RAYS.

Windows by the Gallon

Walls, columns and ceilings can be made to **aid** production as well as house it, when they once become light-**diffusing**. Coating them with Arco-Rays literally adds the illuminating power of windows to your walls—enabling them to throw into the farthest aisles and corners the light of both lamps and windows, and **intensifying** it. Many textile mills have already brightened their ceilings, columns and walls with this semi-gloss, pure-white finish and are today profiting by their use of

ARCO-RAYS
"LENGTHENS YOUR DAYS"
TRADE MARK

Ordinary gray or drab walls **hamper** production by failing to reflect more than from 12% to 40% of the light that reaches them. Walls finished with **ARCO-RAYS**, on the contrary, reflect 80% of the light—postpone lamp-lighting time for an hour or more, and remove the strain on eyes, the frequent mistakes and accidents, the excessive spoilage and seconds, and need of critical inspection that inevitably results from poorly-lighted interiors.

MEANS MORE PROFITS—The effect on employes is marked. Tempers improve, eyestrain disappears, accidents are minimized, workmanship grows more skillful, and the morning rate of speed is maintained right into the afternoon. Humanitarian?—yes. And in equal measure profitable, for better men make better work as two and two make four.

BUY ONLY ON TEST—Test Arco-Rays on several square feet of wall-space alongside any other brush-applied product. Scrutinize it for superior light-reflection, whiteness and permanence, and be guided only by the result. **Buying Arco-Rays** on your judgment rather than our recommendation is the only and **right** way to more light.

Tell us the details about your walls—amount of surface, character of material they are made of, use to which rooms are put—and we will gladly send you, without obligation, a material estimate on Arco-Rays, "Lengthens Your Days."

ARCO-RAYS "Lengthens Your Days"

is a semi-gloss, light-diffusing product for factory interior walls.

All white objects have the same reflecting power. White porcelain, white paper, or any brush-applied white will reflect just as much light as is reflected by **ARCO-RAYS.**

But **ARCO-RAYS** on account of the especially treated oils used in its manufacture stays white, and its merit lies in the fact that it will stay white longer than any other brush-applied material.

A high-gloss white surface causes specular or mirror-like reflections. Though there is plenty of light reflection from walls treated with a high gloss coating this reflection is just as injurious to the eyes and nerves of those subjected to it as is the strain from not enough light.

ARCO-RAYS produces a semi-gloss finish that diffuses 80 per cent of all the light that falls upon the walls to which it has been applied. These semi-gloss walls distribute just as much light as highly gloss surfaces, but without the injurious reflections.

SPECIFY ARCO TRADE MARK REG. U.S. PAT. OFF.

1115 WISE BUILDING

THE ARCO COMPANY
Founded 1880

CLEVELAND OHIO

Paints, Varnishes and Enamels

SPECIFY ARCO TRADE MARK REG. U.S. PAT. OFF.

EFFICIENT LIGHTING *is an* ECONOMY

WHEN Mr. Edison invented the incandescent lamp thirty-seven years ago, he performed perhaps his greatest service to the world.

Electric light is now for all. Its cost has constantly decreased—its efficiency constantly increased. The greatest recent development in efficiency is the new gas-filled MAZDA C lamp.

EDISON MAZDA C

In every shop, in every factory, mill and office where good light is essential to good work, Edison MAZDA C Lamps (75 to 1000 watts) should be used for the strong light sources.

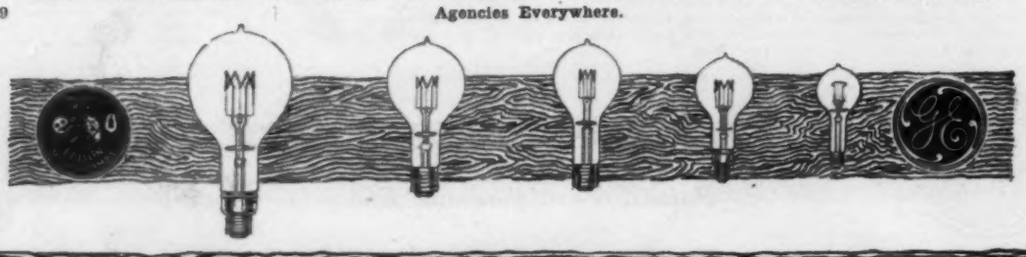
For the lower candlepowers (10 to 60 watts) specify Edison MAZDA B as usual, and get three times the light of the old-style carbon lamps from the same amount of current.

If your lighting problem is difficult, let our Illuminating Engineers assist you.

EDISON LAMP WORKS OF GENERAL ELECTRIC CO., HARRISON, N. J.

Agencies Everywhere.

6029



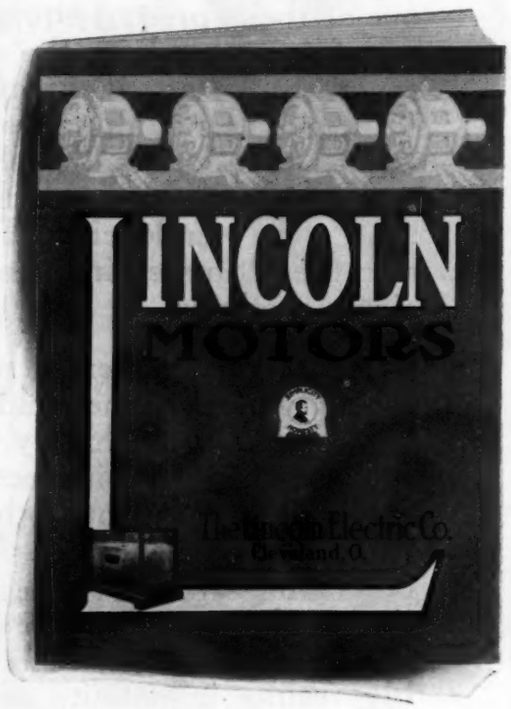
LINCOLN MOTORS

Get This Motor Book

A simple, straightforward Lincoln talk on motors and motor drive with no mystery or high sounding technical language.

There is nothing hard to read or understand about this Lincoln Book, still it contains all the information that could be asked for, even by an electrical specialist.

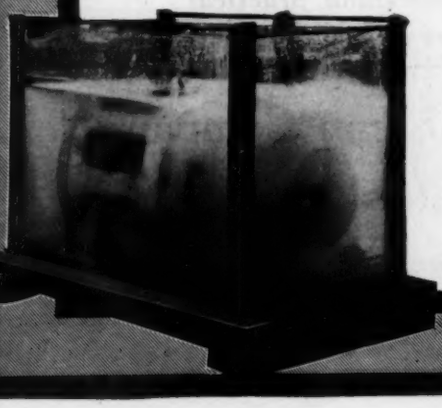
Every cotton mill and every manufacturer of cotton mill machinery should have a copy of this book.



48 pages large, readable type. Illustrated with 150 photographs

Tear out this memo and hand to your stenographer NOW.

This Book tells why the Lincoln motor has run under water for over 3 years without damage to windings.



STENOGRAPHER'S MEMO

M_____

Write the Lincoln Electric Co., Cleveland, O., for Motor Book 101-N, and please see that I get this book when it comes.

Sign_____

TO INCREASE PRODUCTION

A suggestion on a production factor of extreme importance, but apparently little understood

EVER since conditions have created the greatest sellers' market ever known by the textile trade, it has been the aim of mill men to increase their production, not only by the addition of more machinery, but by getting more out of their present equipment. The former has been the aim of some, but the latter the aim of all. To attain the maximum result the minimum effort is the shortest way of expressing modern manufacturing tendencies. This is also the ultimate aim of all efficiency methods.

A summary of textile mill efforts shows some men endeavoring to speed up machinery, others saving time in the inspection or finishing departments, others installing efficiency schemes, others improving working conditions and so on. But there is one important method which invariably results in definite and material production gains and which the average manufacturer knows little about because it has never occurred to him as being an important factor.

We refer to the artificial lighting in a mill—a subject which competent engineers have investigated and definitely pointed out as the biggest factor of all in efficient mill operation.

It has been shown that the cost of good lighting is almost negligible. It is the cheapest of all efficiency devices and affects every condition relating to production as no other factor does.

There seems to be no reason why the manufacturer should not give this matter the attention it deserves. It is true that scientific lighting is little understood, but expert advice is available to every mill man without any effort or expense other than the mailing of a post-card.

The Westinghouse Lighting Engineers understand practical textile mill lighting and their services are at your disposal.

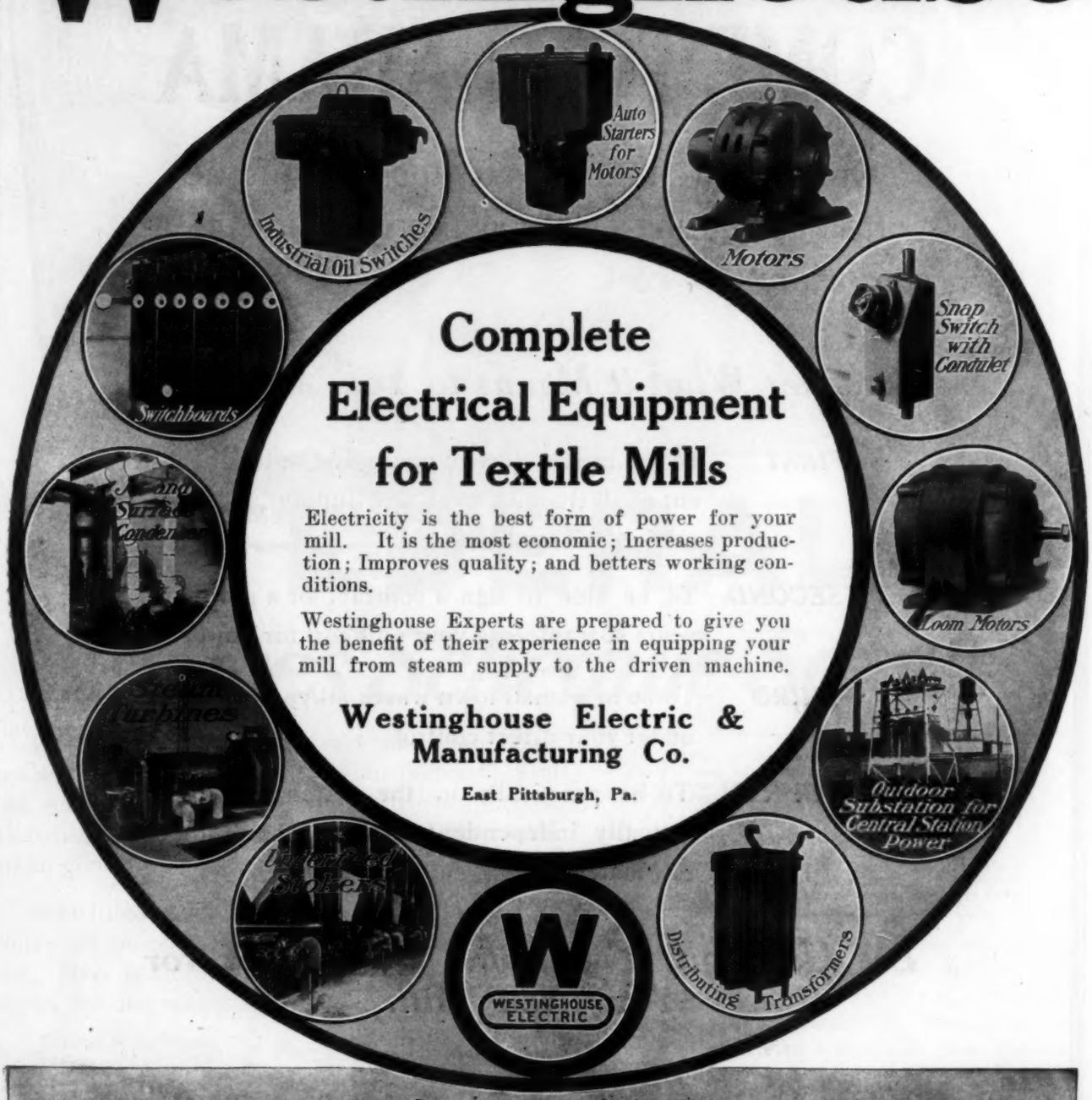
GUARANTEED BY THE NAME

Westinghouse Lamp Company

165 Broadway, New York, N. Y.

Sales Offices at Warehouses Throughout the Country.

Westinghouse



Complete Electrical Equipment for Textile Mills

Electricity is the best form of power for your mill. It is the most economic; Increases production; Improves quality; and betters working conditions.

Westinghouse Experts are prepared to give you the benefit of their experience in equipping your mill from steam supply to the driven machine.

Westinghouse Electric & Manufacturing Co.

East Pittsburgh, Pa.

COME TO ALABAMA

The South is the place to locate your new cotton mill, where you get production at a uniformly low cost.

Consider What it Means to You.

FIRST. To use hydro-electric power and be independent of all troubles over fuel supply and fluctuating prices of coal.

SECOND. To be able to sign a contract for a period of years guaranteeing your unit cost for power.

THIRD. To be in a small town where all your labor is under your direct control.

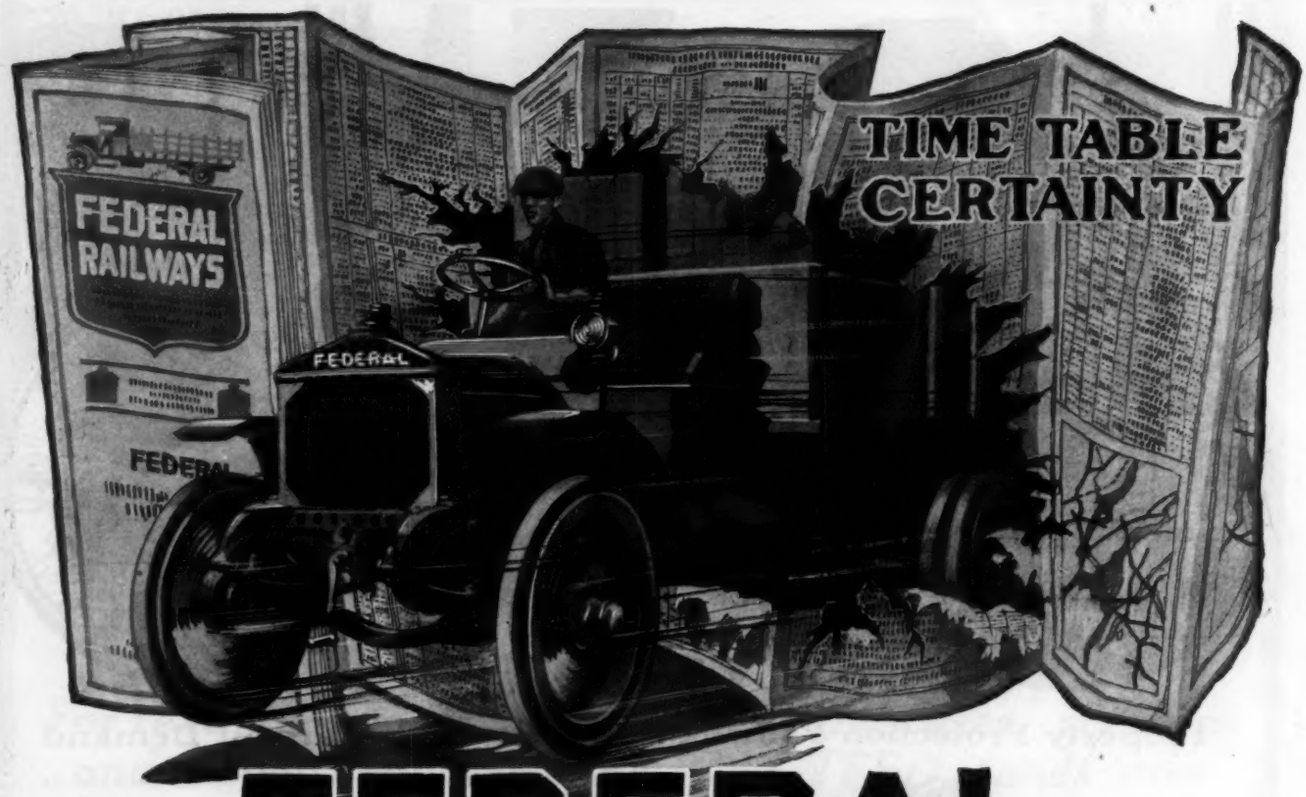
FOURTH. To be practically in the cotton fields and virtually independent of the transportation of raw materials.

Let Us Show You Some Ideal Sites for Your New Mill.

Alabama Power Company

120 Broadway, NEW YORK CITY

Brown-Marx Bldg. BIRMINGHAM, ALA.



FEDERAL

Assures Schedule Service

With a FEDERAL you can plan your haulage as you plan the output of your factory. You can schedule your deliveries to fit your needs, knowing that FEDERAL dependability will make good for you.

Scheduled deliveries mean better service to your customers and more economical haulage for you. Here is an instance of the way FEDERAL works for one manufacturer.

Federal Motor Truck Co.,
Detroit, Mich.
Gentlemen:—

Five years ago we bought our first FEDERAL and turned it in about a year ago on our present truck. Our old truck gave us splendid service, so much so that we did not consider any other make when we came to purchasing a new one.

We now have our second FEDERAL and our experience has been such that we believe the FEDERAL cannot be excelled.

Yours very truly,
WESTERN CASKET COMPANY.
(Signed) W. H. Mayhew.

This is the schedule of deliveries which James Riha, trucking contractor for Sears-Roebuck & Co., contracts to follow:

Truck No.		1	2	3	4
Warehouse	Arr.	7:30	7:45	8:00	8:15
"	Lve.	7:45	8:00	8:15	8:30
Plant	Arr.	8:00	8:15	8:30	8:45
"	Lve.	8:15	8:30	8:45	9:00
Warehouse	Arr.	8:30	8:45	9:00	9:15

Note: These four trucks on a 15 minute headway make a round trip every hour.

We maintain a Traffic Engineering Department for business men interested in more efficient haulage. If you will send us data on your present delivery system, we will return an analysis on your own requirements, stating the size and type of FEDERAL which can reduce haulage costs for YOU.

"Federal Traffic News"
sent on request

FEDERALS are made in a complete line from 1 to 5 tons capacity.

Federal Motor Truck Co.
47 Leavitt St.
Detroit, Mich.

Danger in Unpreparedness

Prepare--Now

The safety and the efficient operation of great manufacturing plants, in time of threatened national danger, is imperative and necessary to national defense.

The first and most necessary precaution is the erection of fencing that really protects.

CYCLONE

Property Protection Fencing Fully Meets This Urgent Demand

It encloses factory property with a web of chain link woven steel that is non-climbable and effectually bars all intruders.

Fabric of the best quality, heavily galvanized wire, is practically impregnable. Small mesh leaves no toe hold for would-be climbers. Double brace in each mesh gives shock resisting springiness. Barbed wire top prevents climbing over. Heavy tubular steel posts are equally strong in every direction.

Our engineers will advise with you as to your particular needs.

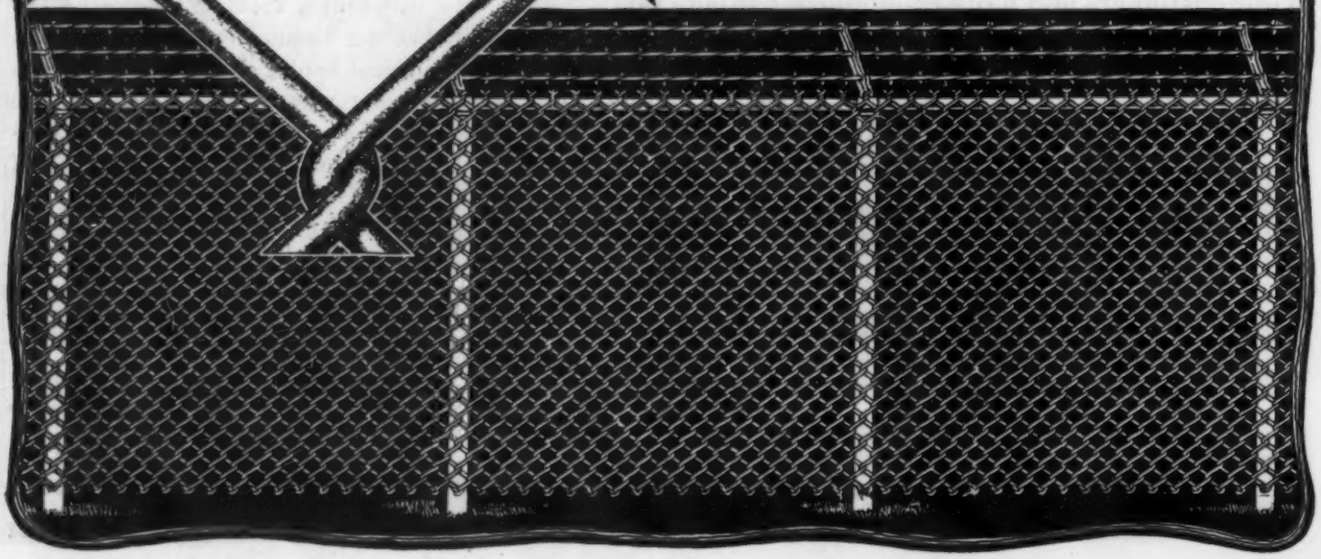
Cyclone Fence is economical, because durable—fire proof, rust resisting, saves annual repair expense—cuts the cost of watchmen to a mere fraction.

Owners of many great factory properties have found Cyclone Property Protection Fencing meets their most exacting requirements.

Illustrated catalog showing various styles and full information sent on request.

Cyclone Fence Company

Waukegan, Dept. 134 Illinois



For textile mills, power plants, warehouses, cottages and all out-buildings, CERTAIN-TEED stands pre-eminent for quality, efficiency and economy.

Certain-teed
Roofing in Rolls.

Where roofing area is considerable, and for mill cottages, CERTAIN-TEED is the most desirable type of roof. It is light weight, spark-proof, fire retardant, weather-proof, easily and quickly laid, costs less to buy, less to lay and less per year of life. Superior to metal because it does not rust or become leaky at joints.

The rolls are 32" wide containing 108 sq. ft. Nails, cement for laps, and directions for laying included. Made in three thicknesses. Guaranteed 5, 10 or 15 years according to thickness, (1, 2 or 3 ply).

Certain-teed
Slate Surfaced Shingles

are ideal for houses, churches, and similar buildings in mill villages. They give a handsome, artistic effect. Superior to wood shingles, because spark-proof, fire retardant, can't rot and do not need painting. They will not crack, warp, split or fall off. Made of same dependable materials as CERTAIN-TEED Roofing and heavily surfaced with genuine crushed slate in natural green or red.

CERTAIN-TEED Shingles are put up in wood crates, each containing 212 shingles. Two crates will cover 100 sq. ft. Gross weight per square, 240 lbs. Each shingle measures 8" x 12¾ and should be laid to allow 4" to the weather.

Certain-teed
Paints and Varnishes.

We are prepared to meet specifications required for all kinds of paints and varnishes used in mill districts. Items of special interest include Mill White, Floor Varnish, House Paints and Metal Paints.

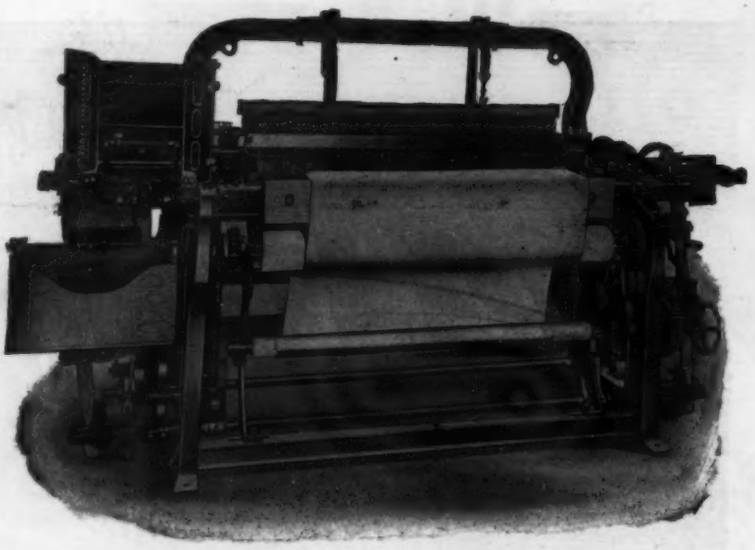
Write our nearest Sales Office for prices and further information.

CERTAIN-TEED PRODUCTS CORPORATION

General Roofing Mfg. Co., Gregg Varnish Co., Mound City Paint & Color Co.

New York Chicago Philadelphia St. Louis Boston Cleveland Pittsburgh Detroit Buffalo San Francisco Milwaukee Cincinnati New Orleans Los Angeles Minneapolis Kansas City Seattle Indianapolis Atlanta Richmond Grand Rapids Nashville Salt Lake City Des Moines Houston Duluth London Sydney Havana

THE "IDEAL" Automatic Loom stands for low operating cost and high quality of fabrics.



It has the widest scope of any automatic loom and can be easily changed over from one fabric to another.

And remember that while saving 50% to 60% in weaving costs for you the weavers can earn from 40% to 50% more wages.

Write for our illustrated catalog.

"IDEAL"

The Stafford Company

Readville, Mass.

Fred H. White, Southern Agent, Charlotte, N. C.

"IDEAL"

42 YEARS EXPERIENCE

1873 1915

DIAMOND FINISH

Spinning Rings
Twister Rings
Silk Rings
Traveller Cleaners
Traveller Cups
Guide Wire Sets

WHITINSVILLE SPINNING RING Co
WHITINSVILLE, MASS.

SACO-LOWELL SHOPS

TEXTILE MACHINERY

INCLUDING

ROVING FRAMES
OF
IMPROVED DESIGN
AND
CONSTRUCTION
SLUBBER FRAMES
INTERMEDIATES
FINE FRAMES AND
JACK FRAMES

SHOPS
BIDDEFORD, ME. LOWELL, MASS. NEWTON UPPER FALLS, MASS.

EXECUTIVE OFFICES
BOSTON, MASS.

ROGERS W. DAVIS, Southern Agent, CHARLOTTE, N. C.

CROMPTON & KNOWLES LOOM WORKS

LOOMS

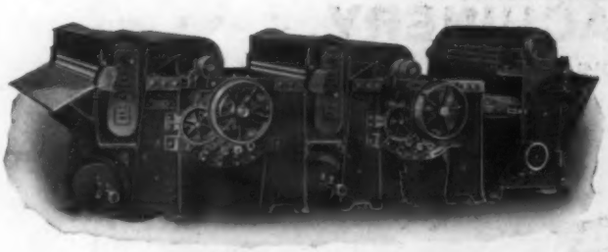
WORCESTER, MASS.

PROVIDENCE, R. I. PHILADELPHIA, PA.

Alexander & Garsed, Charlotte, N. C., Southern Representatives.

SMITH & FURBUSH MACHINE CO.

PHILADELPHIA, PA.



Cotton Waste Reclaiming Machine.
(Shaughnessy Patent.)

This machine does work never before accomplished and cannot be compared to any other.

It will remove dirt, shell, seeds, leaf or other foreign matter from motes, sweeps, fly, strips or damaged cotton.

Now in use by a number of the best mills thoughout the country.

Send for Circular S-90.
We also build a special Willowing outfit for cotton waste—Circular S-9

Woolen Cards

Waste Cards

Ring Spinning Frames

System: G. Josephy's Erben

Asbestos and Flax Machinery a Specialty

Write for prices and particulars direct to the manufacturers.

Lehnert Textile Machinery Company

53 State Street

BOSTON, MASS.

Remember

When changing to a larger or smaller size Ring, that we can SAVE YOU the EXPENSE of buying new holders by FURNISHING YOU a RING with the BASE EXPANDED or CONTRACTED to FIT YOUR PRESENT HOLDERS. We can also furnish No. 1 Flange rings with BASE EXPANDED to FIT HOLDERS MADE FOR No. 2 FLANGE RINGS.

SOUTHERN SPINDLE & FLYER CO., Inc.
CHARLOTTE, N. C.
W. H. Monty, Pres. & Treas.
W. H. Hutchins, V-Pres. & Sect'y.

Clean, Convenient and Economical for Winding Cloth

Strong, Accurate, True. (All Sizes.) Short Freight Hauls.

SOUTHERN NOVELTY CO. - - - HARTSVILLE, S. C.

We hope that all of those who consider foreign built machines superior to home production will take advantage of this offer and order a sample set to compare them with foreign built grinders costing 25 per cent. to 50 per cent. more.

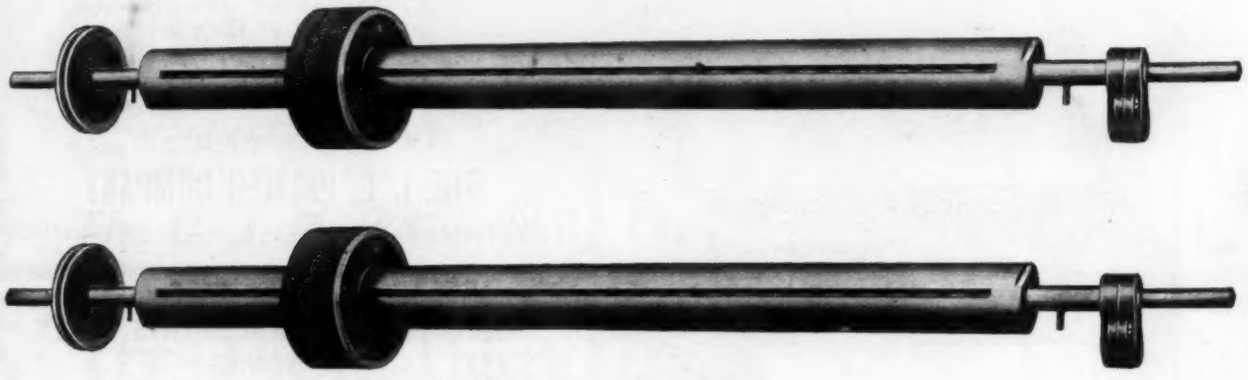
—o—

SPECIAL OFFER

Set of two Improved Hardy traverse and one Improved Roller grinder F. O. B. Worcester, for any make of revolving flat cards.

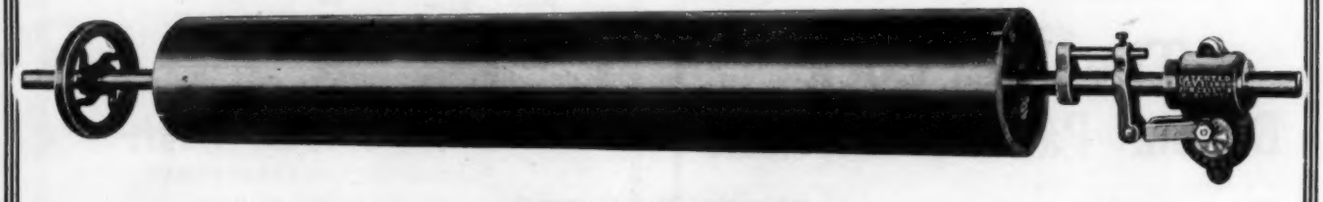
For 40 inch cards, $110.00
For 45 inch cards, $120.00

Both traverse grinders fitted with patent differential motions, $20.00 extra.



SPECIFICATIONS

Traverse Grinders Steel Shells; steel screws; steel shafts; grinding wheel with closed sides and fitted with steel spring dogs, wipers and oilers; sleeve bearings at traverse ends (Roy style); driving and traversing pulleys; and fitted for and covered with emery fillet.



SPECIFICATIONS

Roller Grinder. Patent improved steel roller grinder; fitted with patent reciprocator; driving pulley and fitted for and covered with emery fillet.

—o—

B. S. ROY & SON CO.

ESTABLISHED 1868

WORCESTER, MASS.

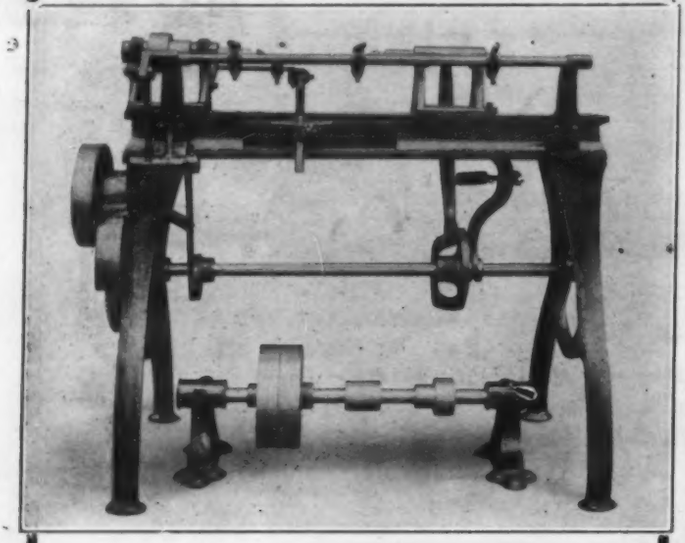
PAINT YOUR OWN BOBBINS
Two Big Reasons

1. An occasional coat of paint or shellac on your bobbins and spools is an investment that will pay good returns. These small but important parts are often overlooked, with the result that time and material are wasted and extra motions are required of operatives to keep up ends on rough and splintered bobbins.

But do your own painting. Don't pay out your good money to the bobbin manufacturers for painting or repainting. Many mills are buying their bobbins and spools unpainted, and saving at least 75% by doing their own painting.

2. Many mills are adopting the color plan for identifying different grades or sizes of yarn or warp, or for distinguishing carded and combed yarn, by using bobbins and spools painted different colors. One mill paints the ends of the bobbins, with the result that if a mistake is made in selecting the wrong bobbin, it would be brought to the attention of the operative or overseer as soon as it was put on the machine.

This plan has many other advantages, but it's too expensive to have the bobbins and spools painted outside or by the bobbin manufacturers.



The J. E. Lock
Bobbin Painting Machine

is a paying investment for any mill. Any class of bobbins or spools, quills, twisters, triptods, etc., can be painted on this machine at a speed of 30 per minute, all of them painted exactly uniformly and with no waste of paint. The cost of operation and supplies allows a big saving over the prices charged for painting by the bobbin manufacturers. Any boy or girl can operate it.

This machine is used by all the big bobbin manufacturers. It pays them, and it will pay you. It is now being used in the largest cotton, woolen and silk mills in the country. More and more mill men are realizing its advantages in their mill.

It will pay you to look into this painting proposition, and full information and prices will be sent you gladly. Drop us a line today.

We carry a complete line of Bobbins and Skewers. When in the market let us quote you.

BLANDIN COMPANY

Lawrence, Mass.

Southern Agent, F. B. CHADWICK, Charlotte, N. C.

The Palmer Adjustable Thread Guide

For Ring Spinning and Twisting Frames

Easily adjusted.

Extreme accuracy and permanence of setting.

Cheapest of them all.

Mail guide-block for free sample.

Patented and manufactured by

THE I. E. PALMER COMPANY

Middletown, - - - Connecticut.

MAKE YOUR ARRANGEMENTS EARLY
FOR THE ANNUAL
CONVENTION and EXHIBITION
OF THE

NATIONAL ASSOCIATION OF HOSIERY AND UNDERWEAR MANUFACTURERS

PHILADELPHIA, PA.
May 7, 8, 9, 10 and 11, 1917
TO BE THE GREATEST EVER
Many New Exhibits Provided For.
More Space Already Reserved and Paid For Than Ever Before Occupied.
Desirable Locations Still to Be Had. Come Early For the Best.

EXHIBITION

120,000 Square Feet Available, affording space for all interests cultivating the Knitting Trade.

A complete working mill exhibit—all operations—a special feature. Large and varied exhibits of knitted goods in all lines will be shown for the benefit of jobbers, retailers and the general public, as well as for American Exporters and Foreign Buyers.

Ask C. B. Carter, Secretary, 425 Chestnut St., Philadelphia, Pa., for detailed information, etc.

ROOT COUNTERS

Small in Size and Cost But Are A Big Help To Textile Manufacturers

ROOT COUNTERS

Root Counters help you to prevent disputes with employees when on piece work—prevent errors in production on quantity orders—prevent waste of material, resulting from over-production.

It doesn't matter whether you want to count the output of a loom, a folding machine, braiding machine or any other textile machinery in your mill, you can get the exact count, mechanically accurate, with a Root Counter.

If your needs are peculiar and entirely different from others we can produce a Counter that will meet your wants. Root Counters operate to left or right; forward or backward; continuous or repeat.

If you want absolute accuracy in counts with all the savings that this means just remember that Root Counters

save countless mistakes and prevent waste, errors and disputes.

There's a Root Counter for every textile use. If you have a counting problem put it up to us. We'll send you the right counter for free trial. Write today for catalog "C."

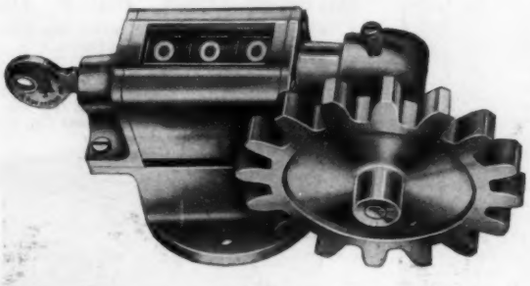
The C. J. Root Company, 40 Johnson St., Bristol, Conn.

Try Them Thirty Days at Our Expense

To prove to you that Veeder Counters will increase your loom production, reduce the cost of weaving per yard, and increase the efficiency of your mill we will send you either of the counters illustrated on 30 days free trial. If the counters illustrated are not suitable to your requirements write us as we make counters for practically every possible purpose where a count is desired.

Loom Pick Counter

Loom Yardage Counter.



Our free textile booklet gives much interesting information. Yours for the asking.

THE VEEDER MANUFACTURING CO.

Speed Counters
Lineal Measuring Counters

6 Sargeant St., HARTFORD, CONN., U. S. A.
MAKERS OF
Cyclometers for Bicycles and Motorcycles, Odometers for Automobiles and Horse Drawn Vehicles, Tachometers, Tachodometers, and Fine Die Castings.

Hank Counters
Thread Measuring Counters

Saving Money in Inter-Plant Transportation

Write for detailed information showing just how Automatic trucks will prove profitable in YOUR plant.

Overcome increasing cost and scarcity of labor by installing Automatic Trucks Now.

Automatic Storage Battery Tractor Hauling 6 Trailers of Wet Cloth to the Drying Room.

Automatic Storage Battery Trucks have quickly saved their Cost in labor and added to production efficiency in many mills

The Automatic Transportation Company

2933 Main Street, Buffalo, N. Y.

The Only Truck Manufacturers to receive gold medal and highest award at the San Francisco Exposition. Pioneer Manufacturers of Industrial Truck

Equip Your Mill With

Leatheroid MILL RECEPTACLES

"Leatheroid" No. 1 Seamless Roving Can. Patented "Leatheroid" rolled top, rolled in and under two and one-half times, having no steel rim underneath the roll to break the can. Solid steel bottom, steel chime, 6 in. kicking band.

Deserve preference because of superior durability.

Any Textile Mill Supply House in the South can supply these receptacles in any size or quantity.

Roving Cans, Trucks, Doffing Cars, Mill Boxes, Barrels, Baskets, Etc.

Sold by the Leading Textile Supply Houses of the South.

Leatheroid Sales Co.

1024 Filbert St., Philadelphia, Pa.

Selling Agents for the Leatheroid Co.

"Leatheroid" Steel Clad No. 2 Car.
Regular Sizes:
32 x 18 x 18 — 42 x 24 x 28
36 x 24 x 24 — 48 x 30 x 30

KEYSTONE FIBRE COMPANY

YORKLYN, DEL.

Roving Cans — Steel Clad Cars — Gill Cans

Mill Boxes — Doffing Cars — Waste Baskets

Strong - Durable - Unexcelled

Southern Agent.

HAROLD C. SMITH, Greenville, S. C.

Write for Descriptive Circular

FIG.20.

All Lane Baskets are made of strictly long staple cotton duck, of high tensile test, woven on our own looms.

FIG.27

Lane Canvas Trucks Embody all the good points of Lane Baskets, plus heavy iron casters fitted with our Improved Thread-Guards which positively shed waste, etc., from the bearings.

LANE

Canvas Baskets
Boxes and Trucks

Accepted by American Mills as

STANDARD EQUIPMENT

Sold direct and through Leading Supply Houses

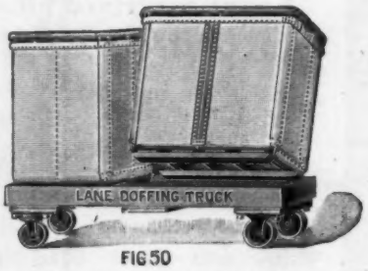


FIG 50

Lane Baskets are light weight and, being perfectly smooth, produce no waste.

Write for Catalog 60

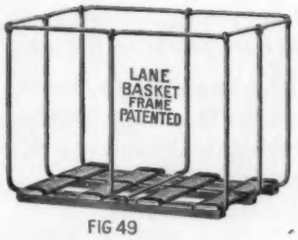


FIG 49

Lane Basket Frames are made of toughest spring steel with flexible eye-joints, which prevent bending or breaking Hard wood shoes are renewable.

W. T. LANE & BROTHER, Manufacturers, **Poughkeepsie, N. Y.**

"Load and Look"

Kron Scales

AUTOMATIC **SPRINGLESS**

All Metal Construction

This picture shows the Kron Hanging Lap Pan Scale in use in the plant of the Exposition Cotton Mills of Atlanta, Ga., one of the most enterprising and up-to-date concerns in the South. Capacity of Scale 60 lbs. 1 oz. graduation, 20 inch dial.

Giving Perfect Satisfaction

Kron Automatic Springless Dial Scales are giving perfect satisfaction in hundreds of mills where the saving of time and labor, the elimination of errors and guesswork, mean a saving of money. By reason of their speed and absolute accuracy, they are saving many thousands of dollars yearly to the users.

Other useful types for the Textile Mill are the **Kron Dormant Platform Scale,** the **Kron Portable Scale** and the **Kron Special Textile Scale,** a portable scale equipped with a flat iron rack or cradle.

Write for catalog and complete information.

American Kron Scale Co.

422 East 53rd St., New York.

CHICAGO—58 East 11th Street
PHILADELPHIA—506 Franklin Bank Bldg.
PITTSBURGH—Business Men's Exchange
CLEVELAND—810 Union Bldg.
BOSTON—141 Milk Street.
PROVIDENCE—125 Washington St.
SAN FRANCISCO—156 Fourth St.
DETROIT—521 Free Press Bldg.
WILSON, N. C.—Opposite Chamber of Commerce

Southern Office—405 Urban Bldg., Louisville, Ky.

Hercules
TRADE-MARK REGISTERED

Combination Doffing Cars

One stationary and one loose fibre box.
Substantial wood platform.
Self-oiling wheels.
Boxes may be steel clad if desired.

Vulcanized Fibre
Roving Cans, Boxes, Trucks, Barrels, Baskets, etc.
Write for Catalog No. 19.

FIBRE SPECIALTY MFG. CO.
Kennett Square, Pa.

Prevent Your Waste and Broken Ends

BY USING

THE

"NO-WASTE"

Seamless Hard Fibre
ROVING CAN

It does not have the riveted seam that strains and breaks the sliver.

NO SEAMS OR RIVETS. ABSOLUTELY SMOOTH.

ALSO

Fibre and Steel Clad Cars, Doffing Trucks and Mill Boxes of All Kinds.

SHEET FIBRE TUBES, RODS Special Shapes.

STANDARD FIBRE COMPANY

25 Miller Street
SOMMERVILLE, MASS.

Necessaries for the Mill and Shipping Department

CARY'S EVERLASTING FLEXIBLE STEEL MAT

Has a Scraping Surface in Every Direction.
Practically Indestructible.

Rust-Proof Reinforced Edges

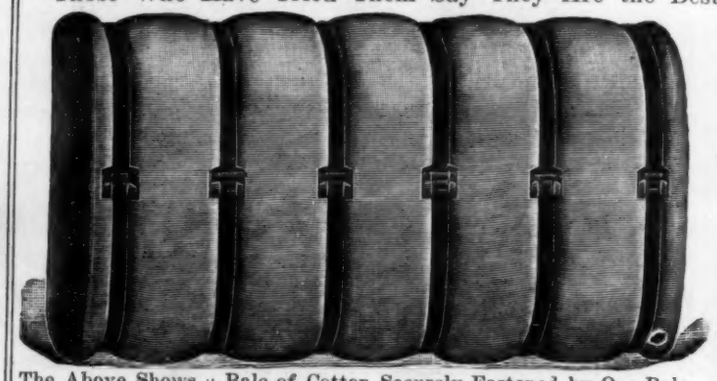
Sanitary Self-Cleaning

The U. S. Government has contracted for this Mat to be used in all its buildngs throughout the U. S.

Twelve Regular Stock Sizes. Special Sizes to Order.

CARY'S BALE BAND AND BUCKLE

Those Who Have Tried Them Say They Are the Best



The Above Shows a Bale of Cotton Securely Fastened by Our Bale Ties and Buckles. Note Its Neat and Compact Appearance.

The Buckle can be applied with the Locking or Hook part next to the Bale, so that there is no possibility of its getting caught in other Bales when piled together.

Also Manufacturers of
Twisted and Flat Wire Box Straps and a Full Line of Shippers' Specialties.

Cary Manufacturing Company, Manhattan Bridge Plaza BROOKLYN, N. Y.

Our new Self-Tightening Twisted Wire Strap.

Nails can be driven anywhere

Find! Don't Stop To Hunt!

The General Manager, wishing to talk with Mr. Smith, instructs the telephone Operator to find him. In less than two minutes the men ar conferring over the telephone—an example of the time saving efficiency of the National Calling System, in which both parties to the call are brought together almost instantly and no one else is disturbed.

NATIONAL CALLING SYSTEM

A down-sweep of the hand on the control levers and a quick turn of the Operating Key sets Mr. Smith's code number (32) to resounding in all parts of the mill.

HOW to extract the utmost value out of working time is the vital problem of modern business management.

To carefully compute the per hour cost of Labor—to install methods and machines to get more value out of Labor's flying minutes and then only indifferently to protect Executive time, which costs so much more, is obviously unsound from the standpoint of both reason and profit.

The National Calling System is efficiency equipment to protect Executive time—it solves the great problem of "instant man finding"—enables executives to get in touch with each other at any minute during the day.

It saves Labor's time too—it takes the place of the old-fashioned telephone "drag net" which involves a dozen people unnecessarily by pulling them away from work to answer futile telephone calls.

The National Calling System is adapted to the requirements of the largest mills and is equally necessary and economical equipment for use in smaller mills also.

Get the facts regarding this latest modern time saver. Ask for Illustrated Booklet C.C.

NATIONAL SCALE COMPANY

4 Bank Street, (*Electrical Division*) Chicopee Falls, Mass.

Manufacturers of National Counting Machines and National-Chapman Elevating Trucks.

CHAPMAN BALL BEARINGS

Saving Profits

"During the next ten years some of the largest profits in American Industry will be saved out of operation. Heretofore profits have been made, but saving a profit is altogether different."

CHAPMAN BALL BEARINGS

the bearings with the double row of balls—begin the saving at the very source of loss. They can save every ounce of that power that is wasted now in overcoming the frictional resistance of those plain bearings on your lineshafts. That waste, eating into your profits, amounts to more than you may think. Some of your profits from these days of prosperity, invested in Chapman Ball Bearings, will help you pay dividends in days of keener competition.

Investigate—Send for our book on Bearings.

TRANSMISSION BALL BEARING COMPANY, Inc.
1050 Military Road, BUFFALO, N. Y.

New York: Room 101, 30 Church St. *Branch Offices* Philadelphia: Bourse Building
CHAPMAN DOUBLE BALL BEARING CO., Ltd., 339-351 Sorauren Ave., TORONTO, ONT.

For Efficiency and Economy

Trade-Mark

Use NIGRUM Bearings

Reg. U. S. Pat. Off.

You'll never have to stop your machine, due to the neglect of someone to properly oil it, providing you use NIGRUM Bearings.

NIGRUM Bearings run smoothly and evenly without oil, grease or attention. They will save you money by saving you oil, and eliminate much of the wear and tear upon the working parts of the machine.

Also manufacturers of **BOUND-BROOK** Graphite and Bronze Oil-less Bearings.

Write for Interesting Booklet, "Oil-less Bearings."

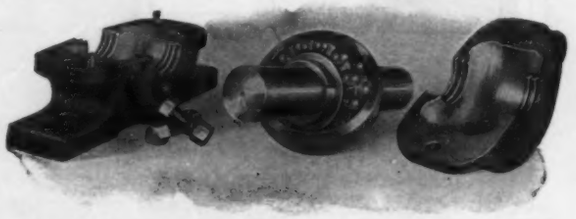
BOUND BROOK OIL-LESS BEARING CO.
10 Church St., BOUND BROOK, N. J.

All Genuine Graphited "Oil-less Bearings" have always been made at Bound Brook, N. J., in the United States of America.

Six Reasons Why Beater and Fan Shafts Should Be Equipped With

HUBBARD SELF-ALIGNING BALL-BEARING BOXES

1. Ball bearings reduce friction and thus save power, and power costs money.
2. The Beater, running on ball bearings, turns at practically constant speed and thus produces a uniform lap.
3. Ball bearings substitute rolling action for the rubbing action of plain bearings and thus wear is eliminated. This assures a permanent accurate setting of the Beater Blade.
4. Ball bearing Boxes are clean. They do not drip oil on the stock or collect oily fly.
5. Greater machine speeds may be obtained and there is no danger of hot bearings. Thus production is increased.
6. We select the proper bearing for the machine where it is to be used, and further, we use S K F Ball Bearings.



Hubbard Beater Box Disassembled, showing S. K. F. Ball Bearing.

For further information and prices write—

HUBBARD MACHINE COMPANY
WORCESTER, MASS.

SAVE RESPLICING COSTS AND DELAYS

When one of the individual ropes on your English system rope drive stretches you simply place a clamp around each half of this coupling, hold one rigidly and twist the other.

The rope is shortened by twisting up the strands and an internal lock holds the rope to the shorter length.

Hunt Coupling ready for use.

By this coupling you maintain the rope at its original diameter, control all stretch during its life and the rope is shortened without removing it from the pulleys.

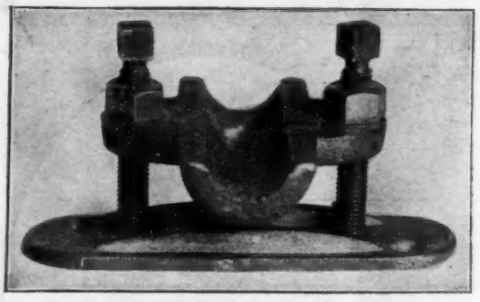
Ask for Catalog W-15-1 giving full information regarding the coupling and describing our "Stevedore" Transmission Rope which is particularly made for power transmission purposes.

C. W. HUNT CO., Inc.,

WEST NEW BRIGHTON, N. Y., U. S. A.

61 Broadway, N. Y. City. Fisher Bldg., Chicago.
Munsey Bldg., Washington.

DAY Adjustable Rocker Shaft Bearings



No. 1 A. Patented Oct. 26, 1915.

THIS is just a common sense attachment that has not failed to satisfy a single mill.

Your rocker-shaft troubles will be over when you equip your looms with Day Adjustable Bearings. They will save you the cost of a new rocker shaft for all time, reduce seconds and thin places, save in supplies, break-outs, and in many other ways.

As one Georgia mill superintendent wrote us.

"Any practical mill man who will test these bearings, will find at least twenty different ways in which they will keep the loom in better shape and increase production. I would advise any mill man to try these bearings and be convinced of the merit of it, like I have been."

This man equipped his 1820 looms with Day Adjustable Bearings.

Any of the many mills using them will tell you about their many advantages.

Let us send you a pair for trial. State kind of loom. Write today.

Textile Specialty Company

(Formerly Day Adjustable Bearing Company)

GREENWOOD, S. C.

The Stronger and Lighter a pulley—the more profitable will be its operation

But strength and lightness are only two of many features that have built up such a great demand for "American" Steel Split Pulleys—over 3,000,000 having been sold in the past twenty years.

"AMERICAN" Steel Split Pulleys are simply and durably made of high quality pressed steel.

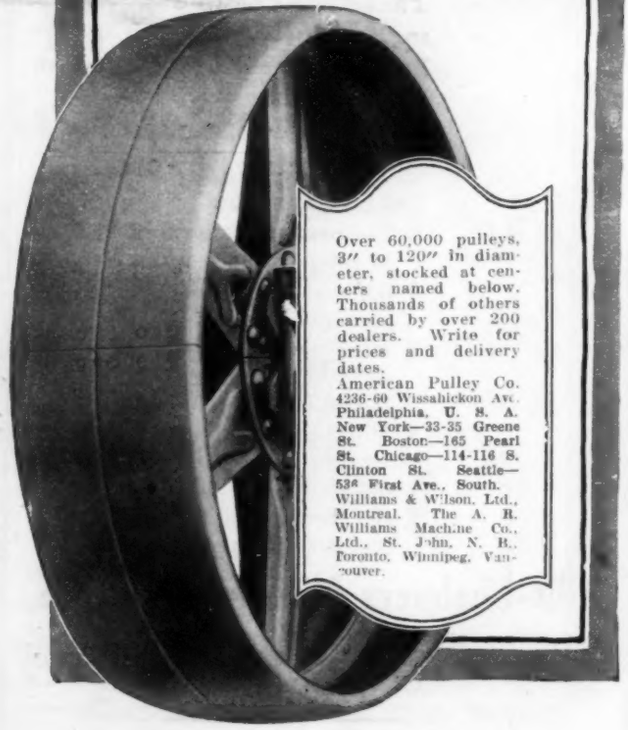
They are easy to install on any line of shafting without the need of keyways or set screws, except where unusually heavy duty is required.

The strongly braced arms are flat, offering but little resistance to air.

"AMERICAN" Steel Split Pulleys are true and well balanced, and will stand unusual strains at high speeds with less belt slip than with wood or iron pulleys.

All of which means that "AMERICAN" Steel Split Pulleys installed in your plant will give you maximum power at minimum cost and effort.

AMERICAN STEEL SPLIT PULLEY



Over 60,000 pulleys, 3" to 120" in diameter, stocked at centers named below. Thousands of others carried by over 200 dealers. Write for prices and delivery dates.

American Pulley Co. 4236-60 Wissahickon Ave. Philadelphia, U. S. A. New York—33-35 Greene St. Boston—165 Pearl St. Chicago—114-116 S. Clinton St. Seattle—538 First Ave., South. Williams & Wilson, Ltd., Montreal. The A. R. Williams Machine Co., Ltd., St. John, N. B., Toronto, Winnipeg, Vancouver.

FREADRICH BELTING CO.

MANUFACTURERS OF

Oak Tanned

LEATHER BELTING

Surface Tanned and Waterproof

LACINGS
CEMENTS
DRESSINGS

SLABS
STRAPS

SOUTHERN REPRESENTATIVE M.E. STEVENS 316 PEACHTREE, ST., ATLANTA, GA.

St. Louis, Mo.

EXPORT DEPARTMENT NEW YORK, U.S.A.

Full Automatic, Semi-Automatic and Hand Operated

Gear Cutting Machines

Especially adapted for use in Cotton Mills. Hundreds now in use. Send for Special Circulars.

The D. E. Whiton Machine Co.,

NEW LONDON, CONN.

Greater Efficiency—
Lower Operating Costs—
Increased Output—

These are Possible in *Your Mill.*

Replace your old mechanical drive with

Allis-Chalmers Textile Motors.

Using these motors

¶ The power may be applied more directly to the work.

¶ Higher operating speeds are possible.

¶ More regular speeds, with smoother running work, are obtained.

¶ Slipping of belts and tortional spring in shafting are eliminated.

¶ Greater flexibility of operation and arrangement are secured.

Allis-Chalmers Manufacturing Co.

Motors for all Drives.

MILWAUKEE, WISCONSIN

CANADIAN REPRESENTATIVES:

Canadian Allis-Chalmers Ltd., Toronto, Canada.

The Heart of an

ECONOMY

renewable cartridge

FUSE

is the "Drop Out" Renewal Link. It is the only thing you have to replace in order to renew a blown ECONOMY FUSE. The expense is trifling, compared to the utter extravagance of discarding an entire fuse after it has operated.

Use Economy Fuses in your plant and by their use cut yearly fuse maintenance bills a full 80 per cent.

Write for free Samples. Test them. Let the results speak for the economy and safety of Economy Fuses. Be sure to ask for Catalog 39.

Economy Fuse & Mfg. Co.
Kinzie and Orleans Sts.,
CHICAGO.
At Leading Jobbers.

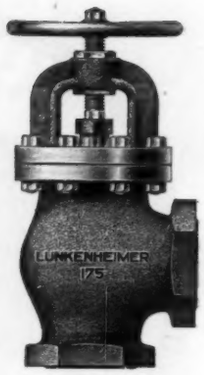
LUNKENHEIMER

Iron Body Bronze Mounted
Globe, Angle and Cross Valves

The highest development in valves of this type,—they give maximum service with minimum cost for upkeep.

The generous proportions and rugged construction, the high grade materials used and the expert workmanship are factors which highly recommend them for steam service where safety and reliability are paramount.

The iron is close-grained and has a tensile strength of 25,000 pounds per square inch. Castings are uniform and free from imperfections. They are made under the direct supervision of skilled metallurgists in our own foundry by workmen specializing in this class of work.



ANGLE VALVE
With Interior By-pass. Flanged Ends. Heavy Pattern.

The bronze composition from which the trimmings are made was formulated especially for the purpose. It has high tensile strength, combined with excellent wearing or bearing qualities.

Seating surfaces are regrindable; all parts are made to gauge and are interchangeable. Regrinding or the renewal of any part can be accomplished without removing the valve from the pipe line.

Workmanship is Lunkenheimer "Quality"—a standard unequalled.

Made in three weights—Standard for 125 pounds, Heavy for 175 pounds, and Extra Heavy for 250 pounds working steam pressure.

GLOBE VALVE
Flange Ends. Standard Pattern.

Buy the best—they are the cheapest.
Your local dealer can furnish them; if not, write us.
Write for descriptive literature.

THE LUNKENHEIMER CO.
"QUALITY"
Largest Manufacturers of High-Grade Engineering Specialties in the World.

New York Chicago CINCINNATI Boston London
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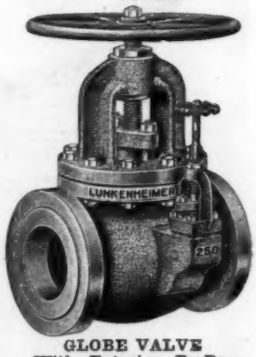


GLOBE VALVE
With Exterior By-Pass. Flange Ends. Extra Heavy Pattern.

Stop That Preventable Waste

Morehead
Back to Boiler
SYSTEM

Feed Your Boilers Pure Water HOT

What Does it Mean to ME?

A saving of fuel and water—an economy of operation which will aggregate a surprising sum at the end of each month!

An absence of accumulated condensation in my steam lines—plenty of pure feed water delivered to my boiler HOT!

Freedom forever from the tribulations of steam pumps—and their inevitable complicated mess. A cleaner, more pleasant place in which to work?

More Than Saves its Cost in a Single Year.

It makes no difference how difficult your particular situation may be—our engineers can suggest an installation which will pay for itself during the first year of operation.

The results which have already been obtained by the West End Thread Company (West Millbury, Mass.) and by numberless other progressive manufacturers can be duplicated right in YOUR mill.

Write for the proof today.

The "Morehead" Book shows actual photographs of some interesting installations. May we send your copy at once?

Morehead Manufacturing Company, Cotton Mill Dept., **Detroit, Mich.**

BLOWERS

For Mechanical Draft

These well known fan blowers are extensively used by power plants throughout the country for producing forced draft. The U. S. S. "Minnesota" has one of our mechanical draft outfits.

Our Blowers are substantially built with cast iron shell of finished design and first-class workmanship to stand rough usage. The side plates of the shell are made interchangeable so that the hanger may be placed on either side, or it may be rotated 180 degrees and the fan secured to ceiling.

We have a corps of engineers with extensive experience who will gladly solve your problems in connection with the motion of air.
Our fans and air washers have set a standard for cooling, heating, and ventilating.
atalogs Nos. 65 and 67 show the complete line. Write for them today.

The New York Blower Co.

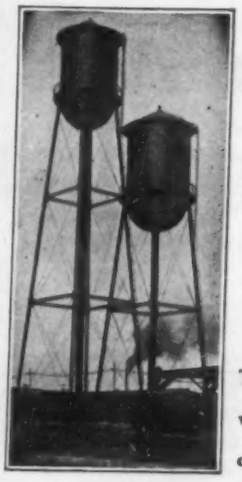
Main Office: Archer Ave., and Canal Street, CHICAGO, ILL.

Works: BUCYRUS, OHIO.

508 Erie Bldg. Cleveland, O. | Ridge Arcade Bldg., Kansas City, Mo. | 502 Plymouth Bldg. Minneapolis, Minn. | 303 B. F. Jones Bldg. Pittsburgh, Pa. | 12 Railroad Place East Orange, N. J.

BUILT RIGHT RUN RIGHT

TOWERS and TANKS
That are Built Right



Boilers,

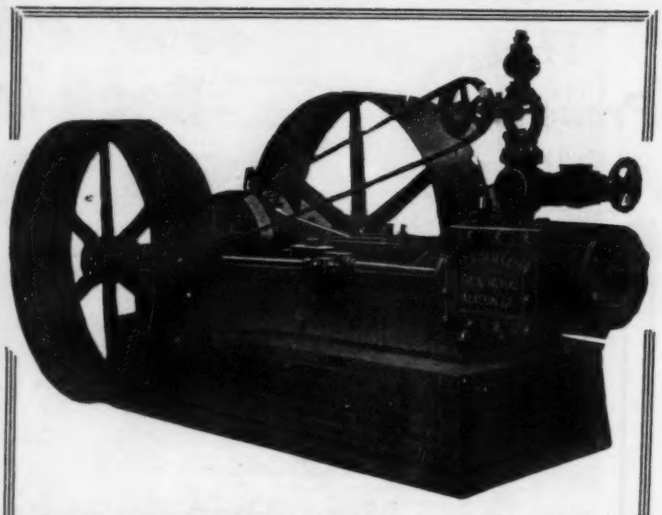
Structural Steel Work

Sheet Steel and Plate Work

Boiler Tubes, Castings, Etc.

Tell us what you want and let us quote prices.

The Walsh & Weidner Boiler Co.
Chattanooga, Tenn.



J. S. SCHOFIELD'S SONS CO.,
Macon, Georgia

MANUFACTURERS OF

High Pressure Return Tubular Boilers, High Grade Stationary Steam Engines, Tanks, Stacks, Stand Pipes.

Heavy Castings and Wrought Iron Works.

An average vacuum of 28" the year 'round

The "Spraco" Cooling System will permit the maintenance of a 28-in. vacuum the year 'round in your condenser and can be operated at less expense than a cooling tower. The superiority of the "Spraco" System over a cooling tower system is emphasized by their installations in over 250 progressive power plants where they are rapidly replacing many cooling tower equipments. The initial investment for a cooling pond is low and the maintenance charge is practically nothing. This system is flexible and may be operated at various pressures to suit weather conditions.

Power plants, large or small, can secure most excellent results from the "Spraco" System.

We assume full responsibility for the design and operation of a "Spraco" System for your particular needs. Our engineers can produce a saving for you of from eight to fifteen per cent, depending on your problem.

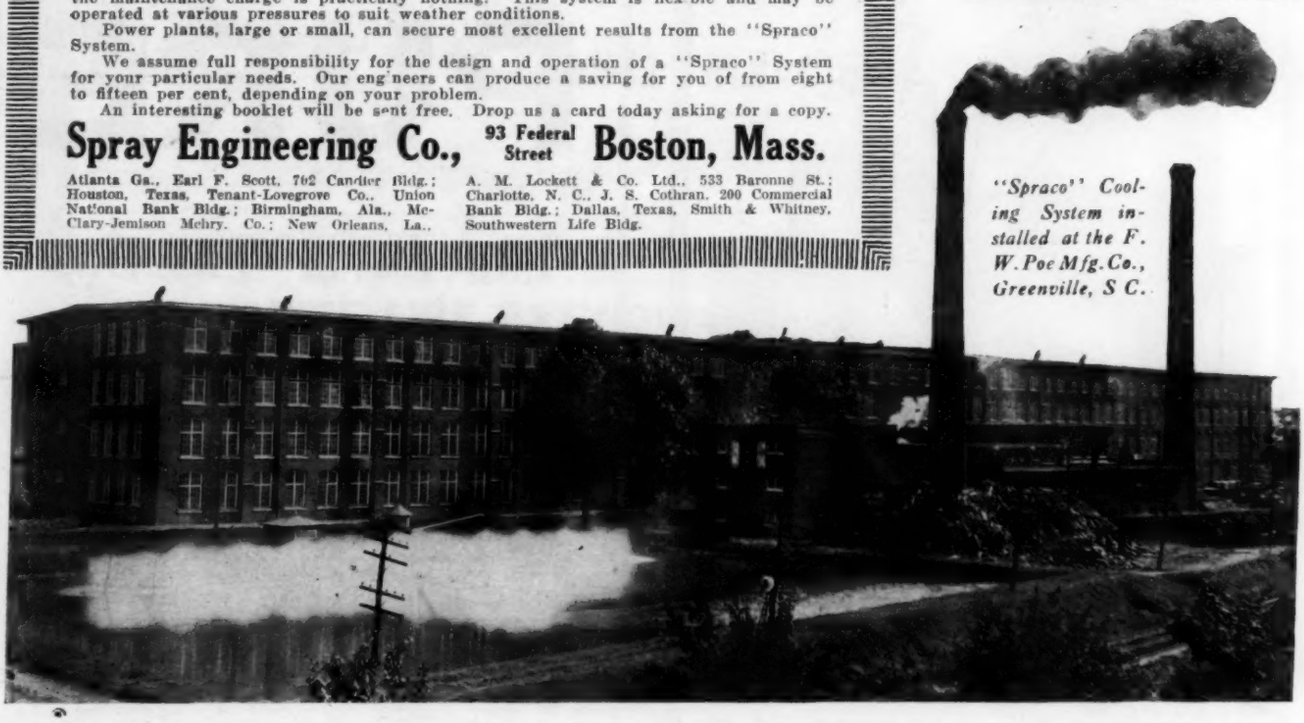
An interesting booklet will be sent free. Drop us a card today asking for a copy.

Spray Engineering Co., 93 Federal Street Boston, Mass.

Atlanta Ga., Earl F. Scott, 702 Candler Bldg.; Houston, Texas, Tenant-Lovegrove Co., Union National Bank Bldg.; Birmingham, Ala., McClary-Jemison Mcbry. Co.; New Orleans, La., A. M. Lockett & Co. Ltd., 533 Baronne St.; Charlotte, N. C., J. S. Cothran, 200 Commercial Bank Bldg.; Dallas, Texas, Smith & Whitney, Southwestern Life Bldg.

SPRACO

COOLING SYSTEM



"Spraco" Cooling System installed at the F. W. Poe Mfg. Co., Greenville, S C.

B-W OXYGEN 99.5 PURE

In addition to our Oxygen Plant at Chattanooga we have recently opened a plant at Savannah, Ga., in connection with the Southern Cotton Oil Co., which we believe is the largest and most up-to-date Oxygen plant in the South.

This Oxygen is of the same high grade as the other products which characterize the Southern Cotton Oil Co. The cylinder and valve equipment is the latest and most up-to-date, and we can guarantee shipments the same day order is received.

Our long experience in Cotton Mill work is at your command, and we should be pleased to quote prices on Oxygen or welding equipment and supplies.

BIRD-WILCOX CO., Inc.

Atlanta Charlotte

Chattanooga Savannah

Installing Foster Automatic Non-Return Stop Valve Would Be A Sound and Saving Step For You

Automatic Non-Return Stop Valve

SOUND because it would automatically protect your plant from loss of life due to the back-flow of steam from the battery into a disabled boiler.

SOUND because men working in cold boilers would be protected.

SOUND because it would protect a boiler while steam is being raised.

SAVING because it would limit damage in case a tube should burst.

SAVING because your firemen would have to be "on their toes," giving equal attention to boilers to keep one or the other from shutting down automatically—that means efficient production of steam.

Why not write today for the new 1917 Foster Catalog and any special information you wish on regulation and control of pressure,—steam, water, gas or air?

FOSTER ENGINEERING CO.

NEWARK, N. J.

180 No. Dearborn St., - - - - - Chicago, Ill.
712 Harrison Bldg., - - - - - Philadelphia, Pa.
404 Arrott Bldg., - - - - - Pittsburgh, Pa.
161 Summer St., - - - - - Boston, Mass.

"Reliability Their Main Feature"

Oxy-Acetylene Welding and Cutting

Operator is repairing broken loom frame by oxy-acetylene welding.

Valuable Loom Frame Saved by Welding

This loom frame was broken badly in three places, and important machinery held idle until a repair or replacement could be effected. Oxy-acetylene welding saved the day—a portable welding outfit was put to work. The repair was completed in a very short time total cost was but $2.25. By this saving of time, material and replacement expense, the welding outfit practically paid for itself on this one job.

The use of oxy-acetylene welding is not confined to repair problems alone. Your junk pile can be made to pay you a profit. By welding you can quickly repair and put back into service broken or worn equipment, oftentimes at a trifling cost.

Prest-O-Lite PROCESS

Employs both gases (acetylene and oxygen) in portable cylinders. Prest-O-Lite Dissolved Acetylene (ready-made carbide gas) is backed by Prest-O-Lite Service, which provides dry, purified gas, insuring better welds, quicker work, and lower cost, and also avoids the large initial outlay and heavy depreciation incurred in making crude acetylene in a carbide generator.

Necessary equipment is not expensive. We furnish high-grade welding apparatus for $75 (Canada $100); acetylene service at additional cost. Adaptable for oxy-acetylene cutting by the addition of special cutting blowpipe. Thorough instructions are furnished free to every user of Prest-O-Lite Dissolved Acetylene—any average workman who understands metals can learn the process quickly and easily.

Send for our free illustrated literature full of valuable information for all textile manufacturers

The Prest-O-Lite Company, Inc.

U. S. Main Office and Factory:
836 Speedway, Indianapolis, Ind.
Canadian Office and Factory, Merritton, Ontario.
55 Branches and Charging Plants.

World's Largest Makers of Dissolved Acetylene

99 50/100% PURE

The Purer The Gas You Use, The Lower Your Welding Costs

When you use BURDETT OXYGEN you are reducing your welding costs to a minimum, for BURDETT OXYGEN is 99 50/100% PURE—the best that can be bought.

There is a Burdett Plant near you.

Save delay by ordering from the nearest Burdett Plant.

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Fort Worth, Texas.	St. Louis, Mo.
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Seattle, Wash.	Philadelphia, Pa.
Detroit, Mich.	Pittsburgh, Pa.
Logansport, Ind.	Cincinnati, Ohio
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Burdett Oxygen Co. and Associated Companies

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St. Johns Court.

Denver
Gas and Electric Building.

BURDETT OXYGEN

"The Best by Test"

What Do You Pay For Fire Insurance?

THE best insurance companies recognize the value of good fire extinguishers placed properly throughout the mill, and they will reduce your fire insurance premiums if you will install them.

But the cheapest fire insurance is insurance against fire. An ounce of prevention is worth a pound of cure any time. If a fire starts in your mill, are you prepared to stop it before it gains headway? If not, then the cheapest and most efficient protection is with the aid of

ACME FIRE EXTINGUISHERS

They pay for themselves by reducing the cost of fire insurance.

They are big enough to extinguish a good sized fire, yet small enough to be quickly and easily handled.

They are examined, tested and labeled under the direction of the Underwriters' Laboratories, Inc.

Ask us today to send you prices of an installation of Acmes in your mill.

Missouri Lamp & Mfg. Co.,

St. Louis, Mo.

NEW AND SECOND HAND MACHINERY IN STOCK FOR IMMEDIATE DELIVERY

F. O. B. ATLANTA

NEW MACHINES

2—16-inch by 8-foot South Bend Engine Lathes.
1—15-inch by 8-foot South Bend Engine Lathe.
1—13-inch by 5-foot South Bend Engine Lathe.

1—1½-inch Landis Bolt Cutter.

1—11-inch by 5-foot Seneca Falls motor driven wood lathe.

Complete stock Emery Grinders with stand and countershaft.

Air Compressors and Receivers (all sizes).

6—20-inch Plain Drill Presses.
6—20-inch Back Geared Drill Presses.
1—22-inch Aurora Upright Sliding Head Drill Press.
1—24-inch Aurora Upright Sliding Head Drill Press.
1—10-inch sensitive bench Drill Press.

1—No. 4 Greenerd Arbor Press.
1—No. 14 Greenerd Arbor Press.
1—20-ton Weaver Arbor Press.

2—No. 1 Marvel Power Hack Saws.
1—No. 2 Marvel Power Hack Saw.
1—No. 5 Marvel Automatic Power Hack Saw.

Imperial Welding and Cutting Outfits.

Lathe and Drill Press Chucks in assorted sizes.

Gasoline and Oil Engines (all sizes).

SECOND HAND MACHINES IN GOOD CONDITION

1—20-inch by 12-foot Lathe.
1—16-inch by 8-foot Lathe.
1—13-inch by 10-foot Sebastian Lathe with raising blocks.

1—24-inch Aurora Upright Sliding Head Drill Press with tapping attachment.
1—20-inch Aurora Drill Press.

Also a complete stock of Mill Supplies and Small Tools.

Can make prompt deliveries on the above subject to prior sale.

SEEGER-WALRAVEN COMPANY

MACHINERY AND MILL SUPPLIES

38 West Alabama Street, **ATLANTA, GEORGIA**

WE CAN EQUIP YOU—WRITE US.

Better Results From Your Equipment

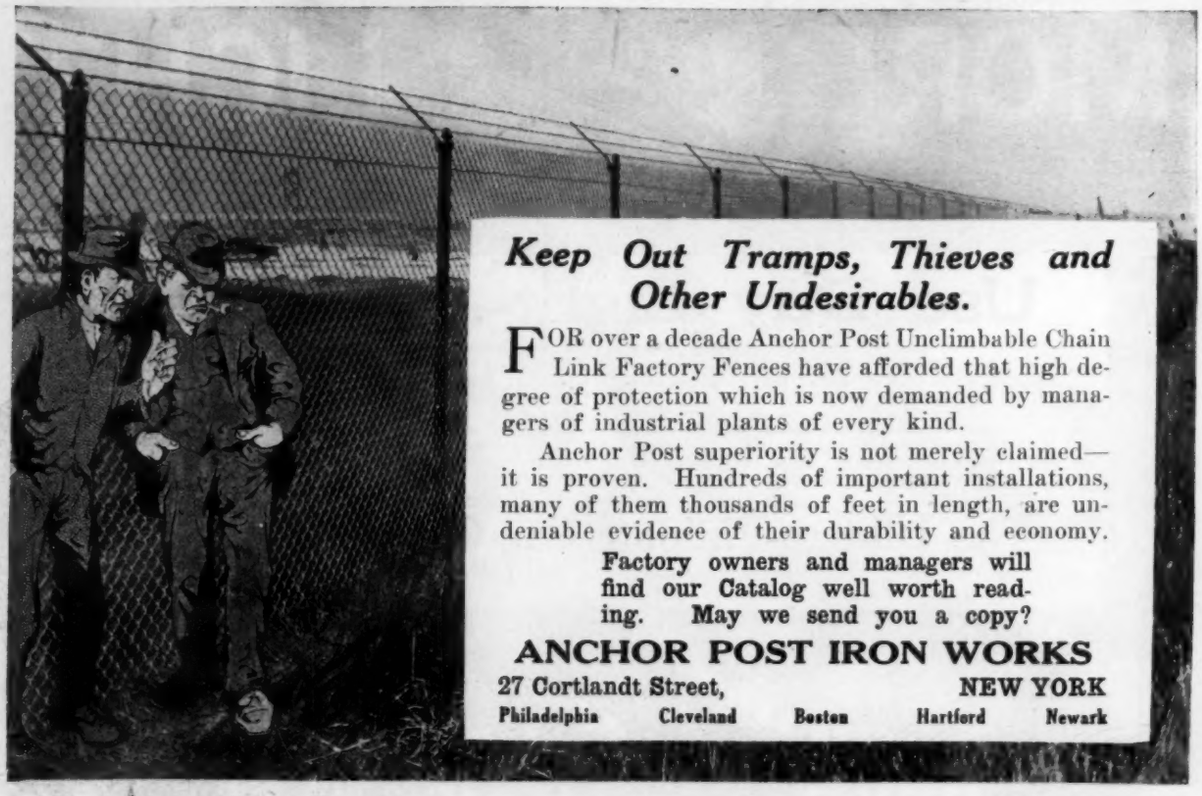
YOU may have been doing your work week after week in the same way, believing that you were getting the best possible results. But this is a mighty swift age and new methods of doing things are being invented day after day—methods which help you get better results from your looms, your spinning machines, your boilers and engines,—your entire equipment.

These are methods you should know about—they are always advertised and in such a way that it's a rare advertising page that will not yield one good suggestion to you.

Suppose you read the advertising pages of this issue with *special* thoroughness and see how many methods suggest themselves to you by which you could make a much better showing, by which you could save time and expense.

—Then act!

ANCHOR POST FACTORY FENCES



Keep Out Tramps, Thieves and Other Undesirables.

FOR over a decade Anchor Post Unclimbable Chain Link Factory Fences have afforded that high degree of protection which is now demanded by managers of industrial plants of every kind.

Anchor Post superiority is not merely claimed—it is proven. Hundreds of important installations, many of them thousands of feet in length, are undeniable evidence of their durability and economy.

Factory owners and managers will find our Catalog well worth reading. May we send you a copy?

ANCHOR POST IRON WORKS

27 Cortlandt Street, NEW YORK

Philadelphia Cleveland Boston Hartford Newark

MISSISSIPPI WIRE GLASS

Postex Cotton Mill, Post, Texas

is installed for Fire and Breakage Protection, Light Diffusion and Minimizing Cost of Maintenance.

Let us mail you samples and literature which will give valuable information.

MISSISSIPPI WIRE GLASS CO.

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NEW YORK.

7 W. Madison St., Chicago, Ill.

4070 N. Main St., St. Louis, Mo.

MORE LIGHT

Upco QUALITY "Since 1881"

Use Day Light---It's Free

Why pay lighting bills, when you can use daylight? It comes in the windows free of charge and gives your workers their greatest efficiency.

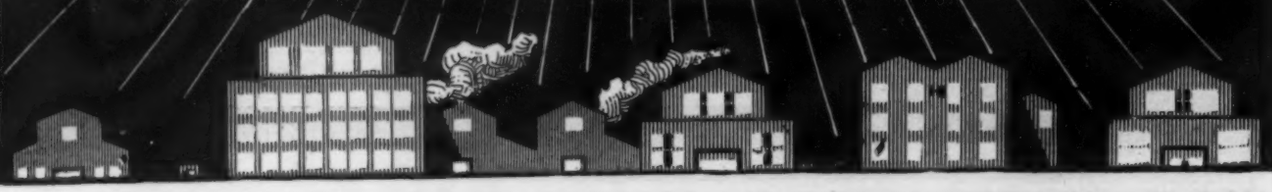
Upco Porcelain Enamel spreads daylight over every wall and ceiling and in every dark nook and corner, until the whole plant is flooded with daylight. It *reflects* daylight instead of *absorbing* it.

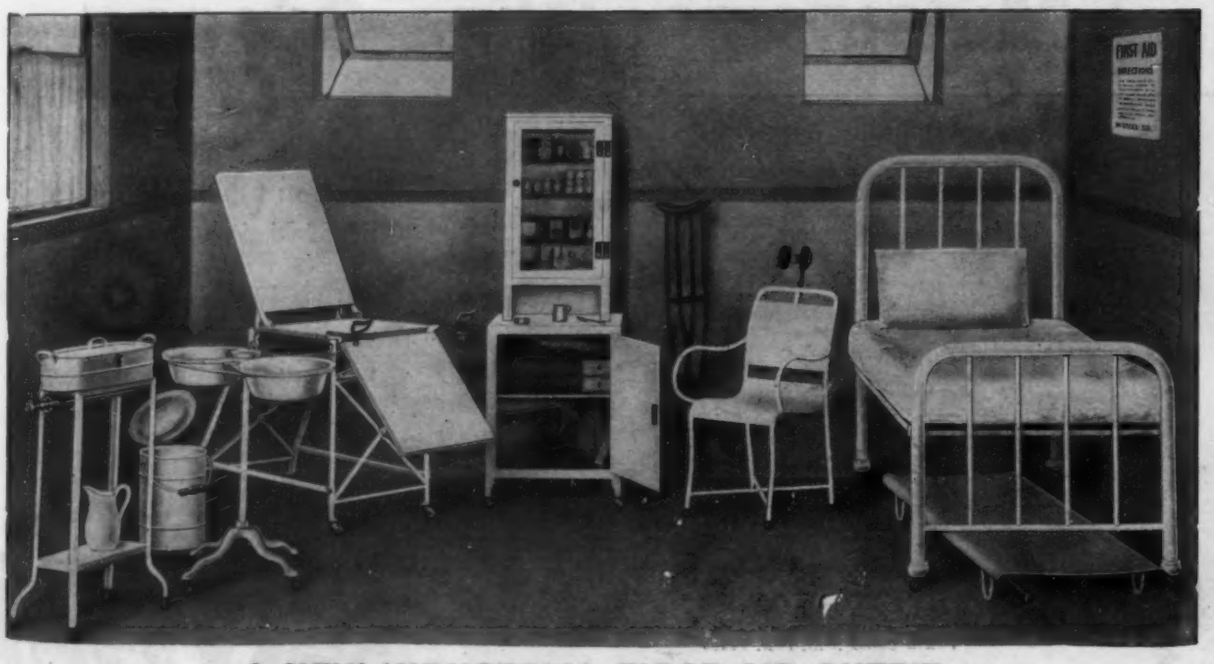
Cut down your spoilage, raise the efficiency of your plant and mill people, increase your production, promote health by using Upco Porcelain Enamel. It will positively stay white longer than any other mill white made. It will retain its high gloss no matter how often washed. It spreads easily, and has great covering power.

Write today for free book "Light Without Power."

The Ullman-Philpott Co., Cleveland, Ohio

Industrial Paint and Varnish Laboratories





A NEW INDUSTRIAL FIRST AID OUTFIT.

Designed by the surgeon in charge of one of the largest Industrial plants in the country, and comes complete with everything needed for First Aid work.

Let us quote you manufacturer's prices on our New First Aid equipment or on a special outfit that better meets your requirements. Send for booklet describing First Aid or Emergency equipments.

FRANK S. BETZ CO. - - - - HAMMOND, IND.

75% of all electric power used in the Textile Mills of this Country passes through G-E Motors

Inevitably—you will electrify

SOONER OR LATER the advantages of G-E MOTOR DRIVE are going to become so apparent, that you will ask our Engineering Organization to study the conditions and requirements of your plant — just as the owners of the equipment here illustrated asked us to do.

For of course you want to know how you can cut the costs of production—how you can save on your POWER costs—how you can increase the QUALITY of your output, and how you can increase its QUANTITY.

In *every* field of activity where power is used, transmitted or generated, the trademark of G-E Initiative and Quality is found. In power stations of far-off mountains you will find G-E apparatus built to meet the special need. You will find the "G-E" trade-mark on the electrical equipment of the Panama Canal and on the locomotives which tow the ships through. The electrification of the railways which carry the commerce of the nation east and west across the Rockies is a tribute to G-E engineering skill. Manufacturing plants, large and small, in all sections of the country, enjoy marked advantages in production over their competitors because the General Electric Company has solved their power problems. All that has been learned in each individual field of electrical endeavor is transmitted through the great Research Laboratories of the company to its engineers in all departments, so that in the solving of *your* problems *you* may have the benefit of all the knowledge and experience that has gone before.

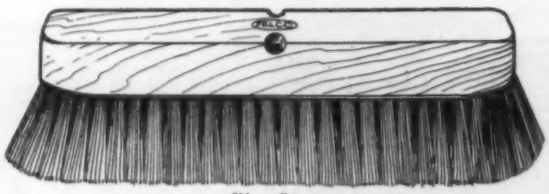
And because the General Electric Company possesses specific, definite knowledge of all the intricacies, puzzles and problems of industrial power, and applies to their solution the knowledge which no other organization can boast, G-E service is the greatest guarantee of results that you can possibly have. The organization and resources of the General Electric Company stand squarely behind every G-E MOTOR DRIVE to insure satisfactory operation.

G-E Motor Drive

GENERAL ELECTRIC COMPANY

General Office, Schenectady N.Y. Mill Power Dept. Boston, Mass.

6841



Floor Sweep

Save Your Broom Expense

FELCO

Floor Sweeps will outwear a dozen brooms. Made in any width desired.

Send us a trial order or write for prices.

D. D. Felton Brush Co., Atlanta, Ga.

S. A. Felton & Son Co., Manchester, N.H.

Manufacturers and Repairers of all Kinds of Brushes.

Felton Curved Floor Sweep for Spinning Room Alleys

SIMPLICITY

An excellent and unique hand threader in a reliable shuttle.

Straight or curved saw cut.

Write for sample set of threader eyes.

SHAMBOW SHUTTLE CO.
Woonsocket, R. I

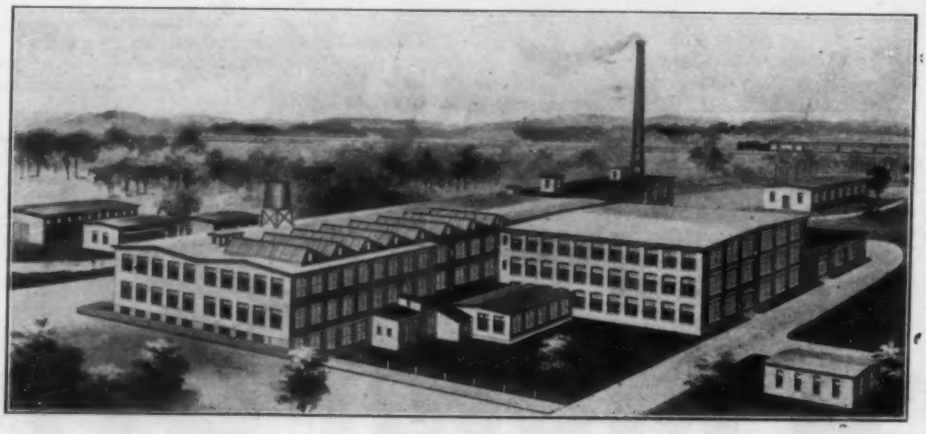
P. B. McMANUS, Pres. and Treas. H. J. McCAUGHEY, Secy. and Mgr.

Home Bleach & Dye Works, Inc.

Established 1881.

Dyers, Bleachers and Mercerizers of Cotton Yarns—in Skein and Warp

Daily Capacity 50,000 Lbs.



PUT YOUR PROCESSING IN OUR HANDS if you want to be sure of results. We have had 35 years of experience in Dyeing, Bleaching or Mercerizing and have every modern equipment operated by skilled employees.
Pure Bleaching for Piece Dye Work. Fancy Colors Dyed to Match Samples. Special Finish. Special Dyeing of Cotton Yarns for Silk Goods in Black and Colors.
Also—Facilities for Winding Cotton Yarns on Paper Cop Tubes for the Shuttle, also on Beams and Cones and Parallel Tubes.

Office and Works at Pawtucket R. I.

APR -9 1917

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COTTON

Published Monthly by

W. R. C. Smith Publishing Co., Dalton and Atlanta, Ga.

L. L. ARNOLD, Editor.

Editorial and Advertising Departments, Grant Building, Atlanta, Ga. Subscription price, $1.00 for two years; Canada, $1.00 a year; Foreign, $1.50 a year. Entered at the Dalton, Ga., postoffice as second-class matter.

Contributions to the columns of Cotton are solicited and paid for after publication. The names of contributors need not necessarily be used, but must accompany all manuscripts.

Orders for any change in advertising must reach Atlanta previous to the tenth of the month preceding month of issue, otherwise publishers cannot be responsible for changes.

When changing address, *notify us*, not the postmaster. Always give the old address as well as the new one.

Copyright, 1917. W. R. C. Smith Publishing Co.

Volume 81. **Member Audit Bureau of Circulation.** **Number 6**

This Issue, 5,400 Copies.

LINK-BELT'S TRIBUTE TO TRADE PAPERS.

Extracts from article by Julius S. Holl, Advertising Manager, Link Belt Company.

(Reprinted from "Class.")

"The trade paper is the manufacturer's best medium for exploiting his product.

"It is the most inexpensive kind of advertising, because it keeps the message of the manufacturer before buyers in his field all the time for a nominal sum, and with comparatively little trouble involved in the preparation of the copy.

"We get direct returns, yes. For instance, we have had 6,776 inquiries from trade papers for our Data Book No. 125, giving complete engineering data on Link-Belt Silent Chain Drive for the transmission of power. But we do not consider the "inquiry" the real index to the value of the advertising or the trade journal. It is a far bigger, better thing than that—though in our case inquiries are sufficient in number to keep our salesmen busy. Our salesmen seldom "canvass," but almost invariably go out in response to direct inquiries from prospective buyers.

"The big idea back of our advertising is to create confidence in our products, to make the buyer want what we have; to do constructive, educational advertising of Link-Belt products and Link-Belt service.

"We realize that getting results from advertising is not a matter of running one or two or half a dozen ads. Constructive advertising takes time. Any man who starts advertising in a trade journal a staple product which does not possess startlingly new or sensational features, should realize that it will take time to get the desired results; but these results are worth waiting for. As John Wannamaker says, "Advertising does not jerk, it pulls." It begins very gently at first, but the pull is steady. It increases day by day and year by year, until it exerts an irresistable force. This is particularly true of trade journal advertising.

"Because we have more and more realized what the trade journals can do for us, the tendency has been definitely in the direction of large space. We formerly used comparatively small space, quarter and half pages, but now we seldom run anything less than a full page. Each ad is carefully built, the foundation usually being a photograph of an installation in the field to which we are advertising, so that every picture tells a story of interest to the readers in that particular industry. It keeps us hustling to dig up these pictures, and to get photos of the right kind, but that makes the sort of publicity that gets the interest of the reader, because the ad talks to him in his own language."

It is a significant fact Link-Belt Company are using COTTON to reach the textile field.

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BOILER SCALE Never Was NEUTRAL

It is always on the offensive, coating the shells and tubes of the boiler and greatly lowering the boiler's steaming efficieney.

Dixon's "Pioneer" Boiler Graphite

is flake graphite. Flake Graphite is the "sapper" that undermines and penetrates the scale at the time of its formation.

Dixon's Pioneer Boiler Graphite attacks scale on all sides, rendering it easy to remove when a cleaning tool is used in the ordinary way.

One engineer effected a saving in cleaning cost of 28¾c on each boiler tube by using "Dixon's Pioneer" method. Why don't you?

Send for booklet 34-T.

Made in Jersey City by the

JOSEPH DIXON CRUCIBLE CO.

Established 1827

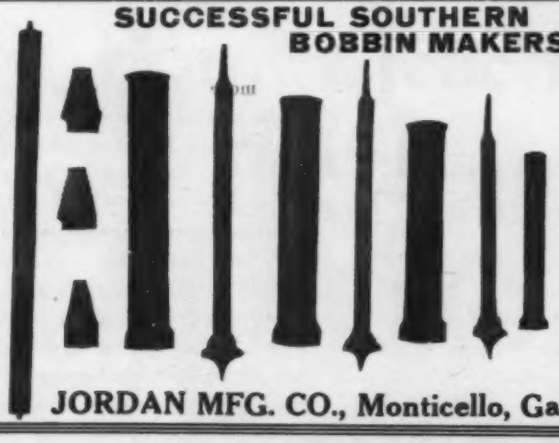
DRAWINGS OF YOUR PLANT

This is a Photo of Our Drawing of the Springstein Mills, Chester, S.C.

WE CAN MAKE A PICTURE LIKE THIS FROM THE ARCHITECTS BLUE PRINTS BEFORE PLANT IS ERECTED

RUDOLPH J. SHUTTING CO. CHATTANOOGA TENN.

SUCCESSFUL SOUTHERN BOBBIN MAKERS



JORDAN MFG. CO., Monticello, Ga.

"An Ounce of Prevention Is Worth a Pound of Cure"

CLINTON CAM COMPANY

CLINTON, S. C.

Our Cam Device Reduces Shock and Prevents Breakage of Various Parts of the Loom.

IT IS THE GARLAND

STANDARD OF INSPECTION

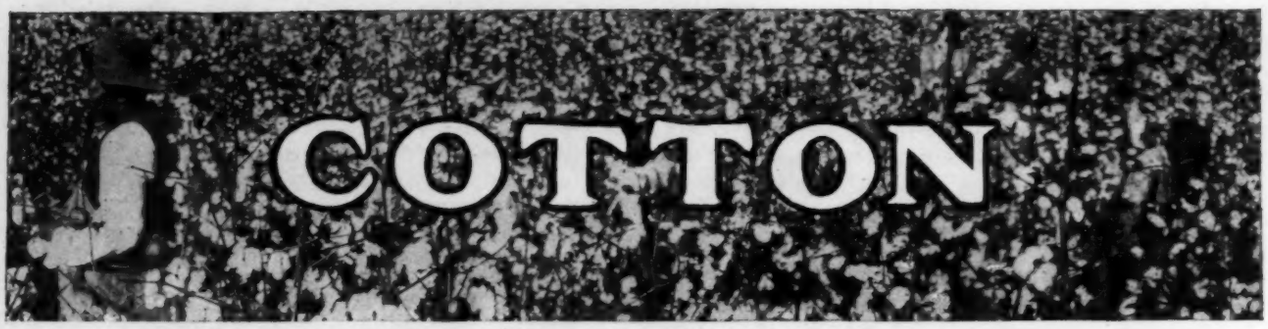
That means a
Perfect
Loom
Harness

The final inspection which each one of our loom harnesses receives when finished is so thorough and critical that every harness which we send out may be depended upon as being as near perfect as it is possible to make it

GARLAND MFG. CO.
SACO, MAINE

TRADE MARK

APR -9 1917



April, Nineteen-Seventeen.

Oxy-Acetylene Welding on Mill Work.

The use of the oxy-acetylene welding process for repair work is a comparatively new development. Until recently little was heard of this process outside of relatively large machine manufacturing shops and those establishments where the oxy-acetylene flame was used for metal cutting. Within the last few years, however, it has made for itself a very definite place in the repair field and has, to a large extent, displaced the old forge with its coke fire as well as the brazing outfits that were formerly found to be a convenient addition to the repair shop equipment.

An example of the growth of this system of welding, after once being established, is well illustrated in the new machine shop of the St. Louis and San Francisco Railway Co., at Springfield, Mo. An oxy-acetylene welding plant was installed in these shops in the spring of 1913, and this system has proven so satisfactory that this company has installed fourteen plants at various points on their system.

A careful accounting of costs from April, 1913, to October 31st, 1916, inclusive, shows a total saving over the old system of welding in the plants of this company of $955,594. From July 1st, 1913, to October 31st, 1916, a saving was made by this process in the new shops of the Frisco Co., of $386,599.18. The record for the month of October, 1916, showed 2,469 pieces welded at total cost of $5,609.97, making a saving of $7,453.34 over the old method.

The heaviest class of work done at these shops was boiler work, 188 fire boxes having been welded since December, 1914, to say nothing of flue sheet patches and side and door sheets. Fire boxes are cut with the torch, stay bolts burned out and engine frames welded.

In the cotton mills where innumerable small parts become worn or broken, quantities of repair parts were necessary, and the mill repair shop was usually a busy place where new castings were machined or old ones patched in some manner. Besides all this, many new parts were purchased by those mills where the repair shop capacity was not sufficient to keep up the necessary supplies desired by the different departments.

From time to time COTTON has published accounts of odd and interesting jobs which were accomplished by means of the oxy-acetylene apparatus. For example, the water end of a large Worthington fire pump cracked, and was welded, thereby saving the mill the cost of a new water end, which was about $850.00. At another mill, the wrist plate on a large cross-compound condensing Corliss engine cracked. That end of the engine was blocked up and the engine run with one cylinder and one end of the other cylinder until night. That night the wrist plate was removed, taken to the welding shop, welded, polished and replaced on the engine so that the engine was ready for starting up the mill the next morning.

Other jobs that might be mentioned as coming within the range of this apparatus, that might also be termed extraordinary jobs, were the welding of the cylinder of a humidifying pump, the cylinder of a boiler feed pump, the engine cylinder on the ammonia compressor in the private ice plant of a mill, and the central arm and work arm of a cloth baling press. All of these jobs would have necessitated temporary or departmental shut-downs had it not been for the convenient and rapid working equipment in the oxy-acetylene welding department.

It has frequently been an interesting question for discussion, however, as to just what could be accomplished in a mill in the way of common, or everyday repairs. The following figures secured from the cost sheet of a well known Southern mill, show the actual saving on mill parts over a period of twelve months.

In the weaving department the total value of the welded parts, counting them at full value, was $1835.43. The cost of carbide, oxygen, etc., was $369.33. The labor cost was $495.00, thus making a net saving in the weaving department alone of $971.10. Before the welding apparatus was installed, a certain few of these parts were saved and patched, while others would have been discarded entirely. To place this on a money basis, in accordance with the total parts welded in the twelve months as shown, the total value of all parts that would have been saved and patched had the welding apparatus not been at hand, would have amounted to $314.61, and the parts discarded would have amounted to $1520.82.

It must not be presumed from the foregoing figures that the welding apparatus is valuable to the weaving department alone. The cost sheet showed work done for the other departments of the mill in the following values: Card and waste room, $305.35. Spinning and spooling room, $99.80. Slashing department, $53.75. Cloth room, $45.15. Machine shop, $502.50. Miscellaneous $65.25. Thus making a total of $1071.80, from which is deducted expenses, viz. labor and material, $576.22, leaving a net saving of $495.58.

Combine these figures with those for the weaving department, and the results for the twelve months show a total value of parts welded of $2,907.23, from which we must deduct the total expenses, which includes material and

freight to the amount of $615.55 and labor to the amount of $825.00, (a total of $1440.55) which shows a net saving in all departments of $1466.68.

The village smithy under the spreading chestnut tree and the private smithy of the textile plant, as well, are rapidly becoming a part of the poetic past.

Employment Conservation by Protection.

Of the many plans now being presented to stabilize the working forces in factories there has, perhaps, none been offered more unique than that of Fell and Co., Ltd., of New York, in a little pamphlet entitled "Employment Conservation."

Every manufacturer realizes acutely the necessity of maintaining a reliable, and steady working force. The estimate is made that $45 per capita is the average cost of breaking in a new employee. This has been under the old methods an inescapable expense. Its magnitude may be imagined, when in taking the country as a whole, we are told that many large plants, in order to maintain a fixed number of workers have every year to hire quite double the number actually working under normal conditions.

Thus a factory employing 1,000 men, would in the course of a year, be at an expense of $45,000 for breaking in new men.

Certainly, taking in the whole country, this example would be above the average, but it is probably within bounds to estimate for the whole country a 40 per cent movement, i. e., for every 100 employees required as a regular force, 140 would appear on the pay roll during the year.

The employee being interested only in his pay envelope and protection against time of need, while the employer's interest is confined to securing the most efficient service from the employee, the problem to be worked out is how to harmonize the two factors in the equation so that both may get what they want. Group insurance, workmen's compensation laws, state insurance are all efforts being made to solve this problem.

Now comes the Fell suggestion which may be entitled "Pension Insurance" though it involves much more than the pension idea. There is nothing complicated about it. It may be worked out through the employer and employees directly, or through a Benefit Association operated by the employees.

Space forbids going into details, but briefly it may be said that there is compulsory retirement at 65 years of age. The employee pays a fixed percentage of his pay, and the employer pays on an ascending scale according to length of service. The employee has life insurance, disability value, loan value, pension value and refund value. To illustrate. A young man enters at 20 years of age, wages $18 per week. Both he and the employer pay the agreed percentage during 5 years. During this period the employee has a life insurance policy of $2.217. At the end of the fifth year he has paid in $234; he can borrow $168. in case of sickness or he can cash his contract for $126 and retire from membership.

Suppose, however, he stays on until 65, he can then draw out $7,341.00 in acordance with the contract provisions, or he can retire on a pension of $677. per year for life and in the event of his death within ten years the pension will continue, for the full period of ten years, to his dependents or relatives. In addition to all this there is an actual refund value to both employee and employer in case employee leaves the service.

These are merely high lights on the plan outlined. A more complete description is given by Mr. Fell elsewhere in this issue. Does it not in large measure solve the problem to the satisfaction of both the parties in interest?

Would it not go far towards stabilizing employment and therefore stabilizing production? And is not that just what employer and employee are seeking?

Standardizing Gin Boxes.

For many years effort has been made by cotton growers, cotton buyers and exporters to improve the packing conditions of cotton and to stop the complaints of European importers who alleged bad condition of American cotton on arrival in foreign countries.

In 1912 a resolution was adopted by cotton interests of the South that cotton gin boxes should be uniform in size, 27 x 54 inches. Investigation had developed that irregularity in the size of bales was responsible, to a large extent, for lack of proper density after compression, causing the conditions complained of by European buyers.

A recent investigation shows a very marked improvement in the packing of cotton. In 1913 bales ranged from 56 to 78 inches in length and from 29 to 38 inches in width. These irregular sizes prevented regularity of packing or stowage in ships. In 1916 a very large percentage of cotton moved in regular sized bales which after compression did not exceed 30 inches in width and 60 inches in length.

In September, 1914, the legislature of Texas passed "The Warehouse and Marketing Law," which resulted in all gin boxes of that state being made a uniform size. Efforts are now being made to induce the Georgia legislature to pass a similar law this year, placing the enforcement under the department of agriculture.

The proper warehousing, marking and packing of American cotton is a matter in which every farmer, merchant, manufacturer and exporter is interested. There is no reason why Egyptian cotton should arrive at European ports in good condition, uniform in size, with clear marking and uniform density, while American cotton in many instances has to be sold account of whom it may concern caused from bad condition and lack of marks, proceeds of sale subject to claim by original consignees. Responsibility of compresses for careful compression with uniformity of size of bales will prove of incalculable benefit to the South's greatest product.

Coming Conventions.

The National Association of Cotton Manufacturers on April 25th and 26th at the Copley-Plaza Hotel, Boston, Mass.

The National Association of Hosiery and Underwear Manufacturers at Philadelphia, May 7th to 11th inclusive.

The American Cotton Manufacturers' Association at the Hotel Willard, Washington, D. C., on May 22nd and 23rd.

The Cotton Manufacturers' Association of Georgia, at St. Simons Island, Ga., June 8th, 9th and 10th.

The Southern Textile Association, Wrightsville Beach, N. C., June 22nd and 23rd.

Making the Most of First Aid Equipment

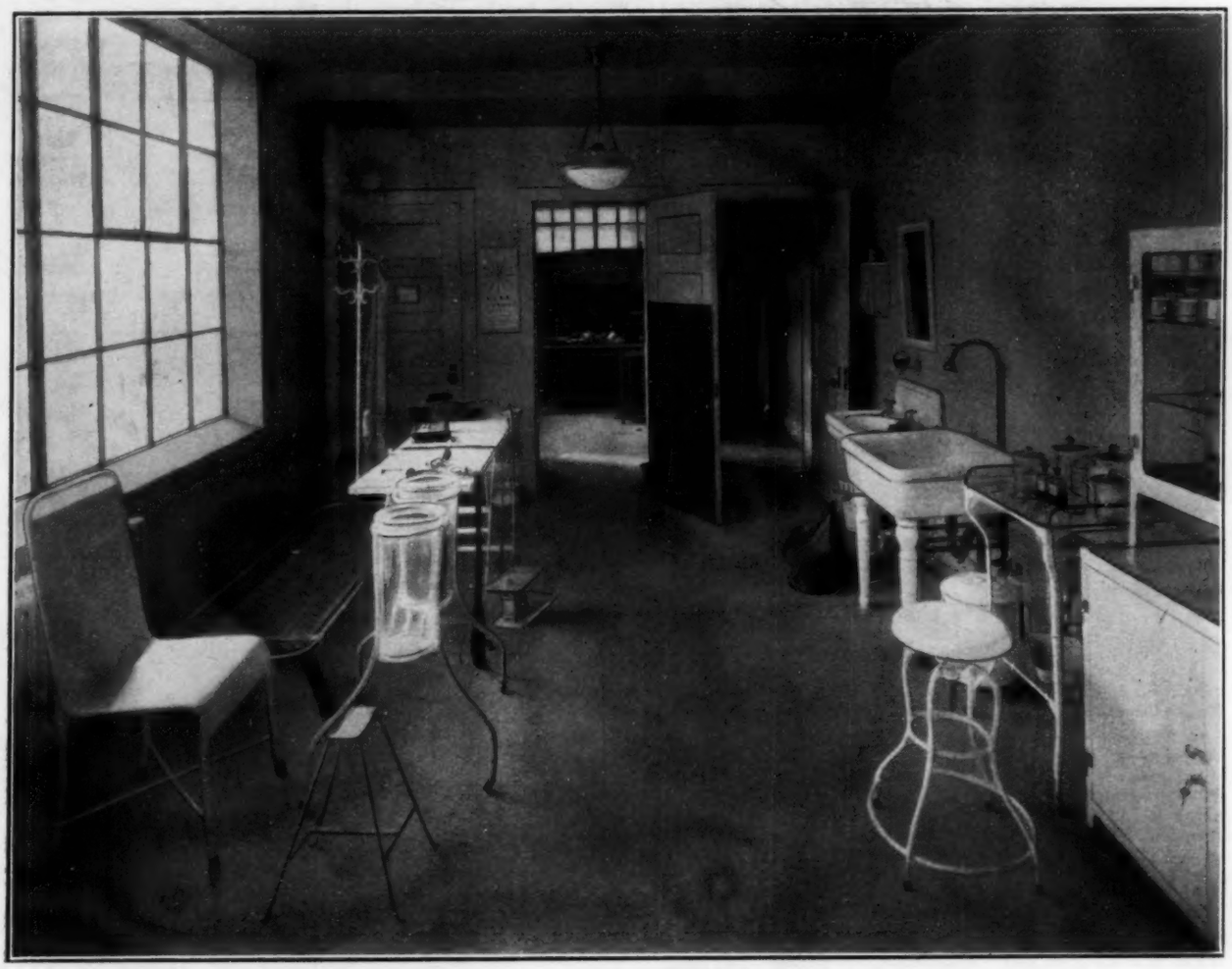
BY G. D. CRAIN, JR.

Many large textile manufacturing plants have gone into welfare work, including the establishment of first aid and health service departments, during the past few years. This is good sense, sound economics and justified from every standpoint, even the most selfish. It is worth noticing, however, that manufacturers often stop short of what might be accomplished by the use of a little more liberality in making provision for their various departments of this kind.

The first object of a cotton mill is to produce. The output of goods, figured in poundage, is the basis on which the superintendent is judged. The manufacturer has a certain amount of floor space, and makes as good use of it as he can by the installation of equipment, so that interest, insurance, depreciation and other items of overhead will be reduced, figured again on the basis of output, to their smallest possible percentage.

The result is that when he decides to give some space to the provision of equipment and supplies for taking care of the physical well-being of his employees, he usually decides that he can't afford to spare very much room for this work, though he is perfectly willing to go to the expense needed to install the equipment which may be decided upon as desirable by the company doctor, the inspector for the casualty company, and the other experts who have given attention to this subject.

That is why one frequently hears the statement made that manufacturers are penny-wise and pound-foolish, because they crowd their first-aid departments into corners where they do not belong, grudging them the space that they ought to have, and making it difficult to carry on the work which must be done. They forget that the equipment is not everything, nor indeed the main thing; that the quarters count for a great deal, and that the purpose for which they are to be used suggests that care and thought and expense, to as great a degree as necessary, should be spent upon making this feature suit the requirements of the mill, instead of being merely a makeshift.



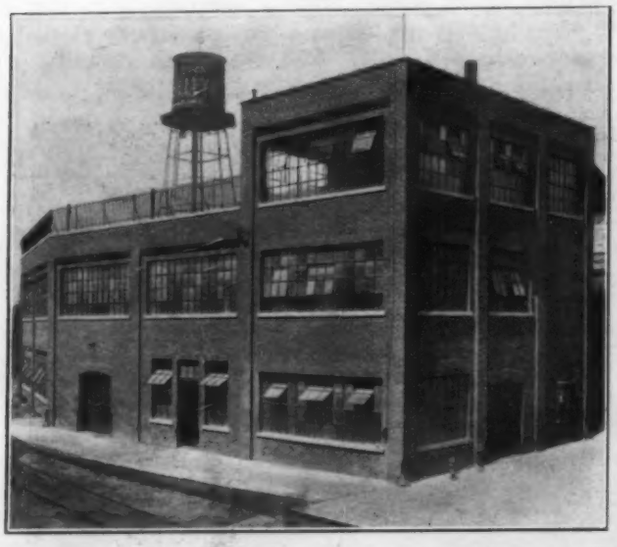
First Aid Room at the Plant of the American Pulley Co., Philadelphia.

One of the best known industrial physicians in the country, who is handling the accident work of a great many large manufacturers, declared the other day that his principal trouble consists of getting the heads of these industries to give him the room which he needs.

"When they decide to put in a first-aid room," he said,

"they do not hesitate to spend as much money as is needed to get whatever equipment and supplies may be deemed necessary; yet they fight against giving up enough space, and in the proper location, to make this investment of maximum service. They think always in terms of production, and do not realize that the value of the first-aid room is sufficient to warrant a sacrifice being made, if necessary, to insure the proper facilities being provided.

"The surgeon cannot do his best work in a room which is not clean and protected from the dirt which accompanies manufacturing. If the first-aid equipment is not installed in the right kind of quarters, the doctor is likely to infect



Health Service Building of the American Pulley Company.

The American Pulley Company has lately opened for use a new building designed for the comfort and convenience and for safeguarding the health of the men employed in the works. The building is of brick and concrete with metal window frames and sash, there being no combustible material used. The building stands by itself, so that light and air enter from all sides. Besides the first and second floors there is a roofed over space 36 feet by 20 feet at the front end, making a third floor room for bad weather use. West of this room, or to the rear, there is a flat roof with parapet and railing where men can sit in good weather during the luncheon hour. On the first floor there is the health officer's room where his records are kept and reports prepared. This is also a waiting room for men to be examined. They pass to a dressing room and shower bath and thence to the examination and first aid room which is long enough to permit a proper examination of the eyes. All men taken on are examined by a physician in attendance before employment. The second floor is devoted to lockers of steel, wash basins and shower baths, and the third or roof floor is as described. A caretaker is on hand at all times and thorough cleanliness is insisted upon.)

the wound in the process of dressing it; and thus the very object which the establishment of this feature was intended to serve will be defeated. Consequently it is a very poor system to be niggardly in the matter of making arrangements for this work, because the results which are aimed at will be missed entirely if it is not properly provided for."

How much room is needed for this department? That is a question which can hardly be answered off-hand, and must be determined largely by the number of employees, the character of the work and similar features. Textile manufacturing is not as hazardous as metal-working and some other lines, and the number of accident cases is therefore not as great and the character of the injuries not so serious. On the other hand, on account of the fact that many girls are employed, illnesses develop rather frequently, and the first-aid room serves just as efficiently in taking care of these, as it does in providing properly for the dressing of an injury.

In a large plant it is desirable to have three rooms, one for use as an office and waiting room, another for a dressing and operating room and the third, containing a couple of beds, to be used by patients who need to recover from the effects of injury or illness before returning to work or going home. In many places, however, a single room is made to suffice, the bed being cut off by a screen, and the "office" being confined to a desk or table in one corner. But reference to the kind of work done indicates the necessity of having plenty of room, securing comparative quiet, and likewise being able to count on cleanliness, light and air.

In fact, in the case of illness, which is often due to overheating, especially in the summer months and in the case of women workers, the matter of ventilation is of prime importance. The industrial physician just referred to even, insists that all of his first-aid rooms be equipped with an electric fan, which he has found to be of great assistance in bringing about recovery from fainting spells due to overheating. And proper ventilation of the room will make for comfort for the employee whom it is desirable to keep in bed for a few hours while recovering from the shock of an accident.

All of these things suggest that in view of the crowded condition of the average mill, the noise which is almost

Office of the Medical Director in the Health Service Building.

universally and inevitably connected with textile manufacturing, and the difficulty of getting as much of the right kind of room as desired, the first-aid department be housed in a building cut off from the mill proper. In many cases the mill occupies a site larger than the dimensions of the plant, and there is some land adjoining. The dispensary can be located on this land, close enough to the mill to enable an employee to be brought to it quickly, and yet far enough away from it to be free of the noise, dirt and confusion of the plant.

Likewise, when special provision of this kind is made,

more room can be conveniently provided than if an attempt were made to fit up some unused corner or other with a first-aid outfit, and attempt to "get by" with this makeshift. The building need not be costly nor elaborate; but as in most cases that which is built for a special purpose is invariably better than that which was intended for something else, and was merely pressed into service in the absence of special facilities.

The manufacturer, who may think that he has done enough when he has spent a couple of hundred dollars fitting up his first-aid room, ought to get that notion out of his head, because if he is going to make his investment profitable to himself or his employees, he must have the personnel with which to back it up. In other words, first-aid service is a matter of people rather than just equipment.

A Class of First Aid Men at the Utica, New York, Tex tile Mills.

If the plant is not big enough to have a doctor constantly on duty there, and comparatively few are, then arrangements should be made to have a physician constantly available on call. It is then highly desirable to obtain the full-time services of a nurse. Many trained nurses have been attracted to work in the industrial field, because of the great opportunity which they have for getting results, and the manufacturer who finds a well-qualified nurse for his plant can add a name to his pay-roll that will represent a big asset.

Women workers especially can profit from the services of a trained nurse, who can advise them and help them over their illnesses, to which they are frequently subject. The advantage to the manufacturer is that his help are able to remain at work, through the ministrations of the nurse, when otherwise they would be inclined to remain at home or to leave their machines in the middle of the day. Any mill employing a couple of hundred girls ought to have a nurse on the job all the time. There will be plenty of work for her to do, and it will be work that will benefit the manufacturer as well as the employees.

If proper provision is made along this line, a substantial reduction in insurance rates can be brought about; but this should be the last thing considered by the textile manufacturer. In fact, if the object of establishing the dispensary is to reduce the insurance rate, then it might as well not be provided, for the results which should be secured will not be obtained.

The first cost of the first-aid equipment is a minor proposition, compared with the expense of putting it to the best use, and this should be understood. But if the manufacturer is willing to do everything necessary, and makes ample and suitable provision for accident and health service, he will find that the increased expenditure thus required will be returned ten fold in the improved condition of his help, the increased quantity and improved quality of the work, and in the ease with which he will keep the places in his mill filled. Workers know where conditions are best—and they will discriminate in favor of a plant of the kind indicated.

The Burdett Oxygen Company completed the erection of its Salt Lake City plant on March first, and are in a position to furnish pure oxygen to users in that territory. This is one of a chain of plants erected by the Burdett Company. The capacity of their Los Angeles plant has recently been increased 50 per cent.

The Federal Excess Profits Tax*

AN ACT to provide increased revenue to defray the expenses of the increased appropriations for the army and navy and the extensions of fortifications, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Title I.—Special Preparedness Fund.

Section 1. That the receipts from the tax imposed by Title II and one-third of the receipts from the tax imposed by Title III of this Act shall constitute a separate fund in the Treasury to be used only for the expenditures incurred under the act entitled "An Act making appropriations for the support of the Army for the fiscal year ending June thirtieth, nineteen hundred and seventeen, and for other purposes," approved August twenty-ninth, nineteen hundred and sixteen; the Act entitled "An Act making appropriations for the naval service for the fiscal year ending June thirtieth, nineteen hundred and seventeen, and for other purposes," approved August twenty-ninth, nineteen hundred and sixteen; and the Act entitled "An Act making appropriations for fortifications and other works of defense, for the armament thereof, for the procurement of heavy ordnance for trial and service, and for other purposes," approved July sixth, nineteen hundred and sixteen, or any other Act or Acts subsequent thereto making appropriations for Army, Navy, or fortification purposes. In addition to such receipts from the taxes imposed under Titles II and III of this Act, there shall be credited annually, beginning with the fiscal year ending June thirtieth, nineteen hundred and eighteen, to such separate fund, the sum of $175,000,000, such sum being the estimated additional revenue to be derived under the Act entitled "An Act to increase the revenue, and for other purposes," approved September eighth, nineteen hundred and sixteen, in excess of the revenue to be derived under then existing laws: Provided, That the Secretary of the Treasury may use such fund for other purposes, but such fund shall be reimbursed for any portion thereof so used.

Title II.—Excess Profits Tax.

Sec. 200. That when used in this title—

The term "corporation" includes joint-stock companies or associations, and insurance companies;

The term "United States" means only the States, the Territories of Alaska and Hawaii, and the District of Columbia; and

The term "taxable year" means the twelve months ending December thirty-first, except in the case of a corporation or partnership allowed to fix its own fiscal year, in which case it means such fiscal year. The first taxable year shall be the year ending December thirty-first, nineteen hundred and seventeen.

Sec. 201. That in addition to the taxes under existing laws there shall be levied, assessed, collected, and paid for each taxable year upon the net income of every corporation and partnership organized, authorized, or existing under the laws of the United States, or of any State, Territory, or District thereof, no matter how created or organized, excepting income derived from the business of life, health, and accident insurance combined in one policy issued on the weekly premium payment plan, a tax of eight per centum of the amount by which such net income exceeds the sum of (a) $5,000 and (b) eight per centum of the actual capital invested.

Every foreign corporation and partnership, including corporations and partnerships of the Philippine Islands and Porto Rico, shall pay for each taxable year a like tax upon the amount by which its net income received from all sources within the United States exceeds the sum of (a) eight per centum of the actual capital invested and used or employed in the business in the United States, and (b) that proportion of $5,000 which the entire actual capital invested and used or employed in the business in the United States bears to the entire actual capital invested; and in case no such capital is used or employed in the business in the United States the tax shall be imposed upon that portion of such net income which is in excess of the sum (a) eight per centum of that proportion of the entire actual capital invested and used or employed in the business which the net income from sources within the United States bears to the entire net income, and (b) that proportion of $5,000 which the net income from sources within the United States bears to the entire net income.

Sec. 202. That for the purpose of this title, actual capital invested means (1) actual cash paid in, (2) the actual cash value, at the time of payments, of assets other than cash paid in and (3) paid in or earned surplus and undivided profits used or employed in the business; but does not include money or other property borrowed by the corporation or partnership.

Sec. 203. That the tax herein imposed upon corporations and partnerships shall be computed upon the basis of the net income shown by their income tax returns under Title I of the Act entitled "An Act to increase the revenue, and for other purposes," approved September eighth, nineteen hundred and sixteen, or under this title, and shall be assessed and collected at the same time and in the same manner as the income tax due under Title I of such Act of September eighth, nineteen hundred and sixteen: Provided, That for the purpose of this title a partnership shall have the same privilege with reference to fixing its fiscal year as is accorded corporations under section thirteen (a) of Title I of such Act of September eighth, nineteen hundred and sixteen: And provided further, That where a corporation or partnership makes return prior to March first, nineteen hundred and eighteen, covering its own fiscal year and includes therein any income received during the calendar year ending December thirty-first, nineteen hundred and sixteen, the tax herein imposed shall be that proportion of the tax based upon such full fiscal year which the time from January first, nineteen hundred and seventeen, to the end of such fiscal year bears to the full fiscal year.

Sec. 204. That corporations exempt from tax under the provisions of section eleven of Title I of the Act approved September eighth, nineteen hundred and sixteen, and partnerships carrying on or doing the same business shall be

*From the Records of The Corporation Trust Company, New York.

exempt from the provisions of this title, and the tax imposed by this title shall not attach to incomes of partnerships derived from agriculture or from personal services.

Sec. 205. That every corporation having a net income of $5,000 or more for the taxable year making a return under Title I of such Act of September eighth, nineteen hundred and sixteen, shall for the purpose of this title include in such return a detailed statement of the actual capital invested.

Every partnership having a net income of $5,000 or more for the taxable year shall render a correct return of the income of the partnership for the taxable year, setting forth specifically the actual capital invested and the gross income for such year and the deductions hereinafter allowed. Such returns shall be rendered at the same time and in the same manner and form as is prescribed for income-tax returns under Title I of such Act of September eighth, nineteen hundred and sixteen. In computing net income of a partnership for the purposes of this title there shall be allowed like deductions as are allowed to individuals in sections five (a) and six (a) of such Act of September eighth, nineteen hundred and sixteen.

Sec. 206. That all administrative, special, and general provisions of law, including the laws in relation to the assessment, remission, collection, and refund of internal-revenue taxes not heretofore specifically repealed and not inconsistent with the provisions of this title are hereby extended and made applicable to all the provisions of this title and to the tax herein imposed, and all provisions of Title I of such Act of September eighth, nineteen hundred and sixteen, relating to returns and payment of the tax therein imposed, including penalties, are hereby made applicable to the tax required by this title.

Sec. 207. That the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, shall make all necessary regulations for carrying out the provisions of this title, and may require any corporation or partnership subject to the povisions of this title to furnish him with such facts, data, and information as in his judgment are necessary to collect the tax provided for in this title.

Title III.—Estate Tax.

Sec. 300. That section two hundred and one, Title II, of the Act entitled "An Act to increase the revenue, and for other purposes," approved September eighth, nineteen hundred and sixteen, be, and the same is hereby, amended to read as follows:

"Sec. 201. That a tax (hereinafter in this title referred to as the tax), equal to the following percentages of the value of the net estate, to be determined as provided in section two hundred and three, is hereby imposed upon the transfer of the net estate of every decedent dying after the passage of this Act, whether a resident or non-resident of the United States:

"One and one-half per centum of the amount of such net estate not in excess of $50,000;

"Three per centum of the amount by which such net estate exceeds $50,000 and does not exceed $150,000;

"Four and one-half per centum of the amount by which such net estate exceeds $150,000 and does not exceed $250,000;

"Six per centum of the amount by which such net estate exceeds $250,000 and does not exceed $450,000;

"Seven and one-half per centum of the amount by which such net estate exceeds $450,000 and does not exceed $1,000,000;

"Nine per centum of the amount by which such net estate exceeds $1,000,000 and does not exceed $2,000,000;

"Ten and one-half per centum of the amount by which such net estate exceeds $2,000,000 and does not exceed $3,000,000;

"Twelve per centum of the amount by which such net estate exceeds $3,000,000 and does not exceed $4,000,000;

"Thirteen and one-half per centum of the amount by which such net estate exceeds $4,000,000 and does not exceed $5,000,000; and

"Fifteen per centum of the amount by which such net estate exceeds $5,000,000."

Sec. 301. That the tax on the transfer of the net estate of decedents dying between September eighth, nineteen hundred and sixteen, and the passage of this Act shall be computed at the rates originally prescribed in the Act approved September eighth, nineteen hundred and sixteen.

Title IV.—Miscellaneous.

Sec. 400. That the Secretary of the Treasury is hereby authorized to borrow on the credit of the United States from time to time such sums as in his judgment may be required to meet public expenditures on account of the Mexican situation, the construction of the armor-plate plant, the construction of the Alaskan Railway, and the purchase of the Danish West Indies, or to reimburse the Treasury for such expenditures, and to prepare and issue therefor bonds of the United States not exceeding in the aggregate $100,000,000, in such form as he may prescribe, bearing interest payable quarterly at a rate not exceeding three per centum per annum; and such bonds shall be payable, principal and interest, in United States gold coin of the present standard of value, and both principal and interest shall be exempt from all taxes or duties of the United States as well as from taxation in any form by or under State, municipal, or local authority, and shall not be receivable by the Treasurer of the United States as security for the issue of circulating notes to national banks: Provided, That such bonds may be disposed of by the Secretary of the Treasury at not less than par, under such regulations as he may prescribe, giving all citizens of the United States an equal opportunity therefor, but no commissions shall be allowed or paid thereon; and a sum not exceeding one-tenth of one per centum of the amount of the bonds herein authorized is hereby appropriated, out of any money in the Treasury not otherwise appropriated, to pay the expenses of preparing, advertising, and issuing the same: And provided further, That in addition to such issue of bonds, the Secretary of the Treasury may prepare and issue for the purposes specified in this section any portion of the bonds of the United States now available for issue under authority of section thirty-nine of the Act entitled "An act to provide revenue, equalize duties and encourage the industries of the United States, and for other purposes," approved August fifth, nineteen hundred and nine: And provided further, That the issue of bonds under authority of this Act and any Panama Canal bonds hereafter issued under authority of section thirty-nine, of the Act entitled "An Act to provide revenue, equalize duties, and encourage the industries of the United States, and for other purposes," approved August fifth, nineteen hundred and nine, shall be made re-

deemable and payable at such times within fifty years after the date of their issue as the Secretary of the Treasury, in his discretion, may deem advisable.

Certificates of Indebtedness.

Sec. 401. That section thirty-two of an Act entitled "An Act providing ways and means to meet war expenditures, and for other purposes," approved June thirteenth, eighteen hundred and ninety-eight, as amended by section forty of an Act entitled "An Act to provide revenue, equalize duties and encourage the industries of the United States, and for other purposes," approved August fifth, nineteen hundred and nine, be, and the same is hereby amended to read as follows:

"Sec. 32. That the Secretary of the Treasury is authorized to borrow, from time to time at a rate of interest not exceeding three per centum per annum, such sum or sums as, in his judgment, may be necessary to meet public expenditures, and to issue therefor certificates of indebtedness in such form and in such denominations as he may prescribe; and each certificate so issued shall be payable with the interest accrued thereon, at such time, not exceeding one year from the date of its issue, as the Secretary of the Treasury may prescribe: Provided, That the sum of such certificates outstanding shall at no time exceed $300,000,000, and the provisions of existing law respecting counterfeiting and other fraudulent practices are hereby extended to the bonds and certificates of indebtedness authorized by this Act."

Returns of Dividends.

Sec. 402. That Title I of the Act entitled "An Act to increase the revenue, and for other purposes," approved September eighth, nineteen hundred and sixteen, be amended by adding to Part III a new section, as follows:

"Sec. 26. Every corporation, joint-stock company or association, or insurance company subject to the tax herein imposed, when required by the Commissioner of Internal Revenue, shall render a correct return, duly verified under oath, of its payments of dividends, whether made in cash or its equivalent or in stock, including the names and addresses of stockholders and the number of shares owned by each, in such form and manner as may be prescribed by the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury."

Approved March 3, 1917.

* * * * *

The Corporation Trust Company then draws the following conclusions:

The burden placed on taxable corporations and partnerships will be extremely heavy—8 per cent of the profits over $5,000 plus 8 per cent of the capital actually invested.

The tax will be based on the net income shown by the income tax returns. In the case of corporations this will mean a heavy tax on a fictitious profit in cases where the bonded or other indebtedness greatly exceeds the capital stock, for the income tax law does not permit the deduction of all interest paid on indebtedness.

Thus a corporation having $100,000 actual capital invested and $1,000,000 indebtedness, with an $80,000 income, of which $50,000 is paid out as interest, and $30,000 is paid out as dividends, will show a net income in its income tax return of $50,000, from which it may deduct $13,000 ($5,000 + 8 per cent of $100,000), leaving $37,000 subject to excess profits tax. $2,960, the amount of tax required to be paid, is in fact almost 10 per cent of the *entire* net income payable to the stockholders.

Unless the Treasury Department rules that all interest paid may be deducted or the courts hold that the law arbitrarily discriminates in this respect and is therefore unconstitutional, corporations having indebtedness exceeding twice the amount of their capital stock may be called upon to pay the tax although in fact their net profits do not exceed 8 per cent of the capital actually invested.

The law will present many difficulties in administration. The definition of actual capital invested, in Sec. 202, presents the difficulty of determining the actual cash value, at the time of payment, of assets other than cash paid in. The intent is, apparently, to ascertain the actual cash value of property for which stock has been issued, *at the time the transaction took place.* The records of the corporation do not always show the actual cash value of property for which stock is issued, but often show a valuation fixed by the board of directors which may be greater or less than the actual cash value. Hence to determine the value required by the law may necessitate expensive appraisals of the value of properties at various periods in the past.

The difficulties presented by Sec. 202 alone are very numerous but other sections also present their problems. It is not within the scope of this statement to present a complete analysis of the law or to point out all of its difficulties and problems. Space forbids more than a word or two regarding partnerships.

Partnerships will be required to ascertain their profits according to the provisions of Sec. 5 (a) of the income tax relating to individuals. This brings up the question of losses in transactions not connected with the business or trade of the partnership—a question which has been fruitful of endless dispute as applied to individuals. Another problem will arise with respect to the exemption of income of partnerships derived from "personal services," in Sec. 204. Where to draw the line in cases where income is largely from personal services of the partners but also to some extent from capital invested will require the Treasury Depatment to consider many specific cases and to rule on each.

The law was hastily drawn and passed by the House of Representatives apparently with the expectation that it would be perfected in the Senate after hearings and debates. Political conditions at the close of the session made it necessary to pass the bill in its original imperfect form. Consequently a greater and more difficult task devolves upon the government and the courts in an effort to make the law workable and equitable.

Conscientious textile men set for their products a high standard, and when this is not reached, they are keenly disappointed. They leave no stone unturned to find the source of the failure; and once having found the seat of the trouble they promptly correct it. Experience has taught the most progressive manufacturers that the surest guarantee against disappointment is found in using materials of recognized merit and unfailing good service. They invariably stick to certain brands. A great many successful textile manufacturers are using the various sizes, tallow, softeners and other supplies for the textile world, made by The Arabol Mfg. Co., 100 William Street, New York City.

A Long Service Dividend

BY HERBERT N. FELL.

One of the most interesting conferences ever held in Washington was the conference on "Social Insurance" held recently at the Raleigh Hotel. Among those in attendance was Herbert N. Fell, president of Fell & Co., Ltd., 71 Broadway, New York, at which time he granted an interview to a correspondent of Cotton.

Mr. Fell has the interest of the workers constantly before him, and is emphatic in his statement that what is best for the workers is best for the employer. He recognizes the fact that every employer desires steady workmen, quite as much as the employee desires steady work. His views radically differ from those employers who would lead us to believe that the American worker does not care for a steady job. In fact he claims that it is only after a man becomes thoroughly experienced in his work and accustomed to his employer and associates that his job is anything but drudgery.

On the other hand, the only man who is capable of rendering really valuable service is the one who enters upon a job with the idea of sticking to it, and remaining with his present employer during his entire workaday life. Mr. Fell believes that a man should not have to begin to work before age 20 and should not have to work after he reaches age 65.

He points out that a man holding a job with one employer for 45 years may be called upon to train 45 other men to fill a similar job alongside of his.

If employers will for one moment consider the profit earned by the employee who remains in the service for 45 years compared with the profit (or loss) resulting from the other job which is filled by 45 different men during these 45 years, they will at once see that it is possible to declare a long-service dividend to the steady worker that will supply his every need. "I do not mean by this," he says, "that an employee who remains 5 or 10 years in the service should not receive any part of this long-service dividend, but that he should receive the exact proportion that his term of service indicates."

For example let us assume that it costs an employer $45 to train each new employee. It is evident that the steady employee on this basis would be entitled to a long-service dividend of not less than $45 per annum together with say 5 per cent compound interest, which in 45 years would amount to $7,500.

Mr. Fell does not believe that it is possible to get the best work from the worker except through scientific co-operation, and in order to bring this about he has devised a plan whereby the worker saves automatically, say 5 per cent of his wage through the incentive of the long-service dividend which is to be guaranteed by the employer. There is no charity in this. It is merely a plan to give the worker what are his just dues, and to secure for the employer what he most needs, which is steady workmen.

To put the plan in the briefest terms, he would establish a pension fund in any given industrial concern having the employee contribute 5 per cent of his wages each year and having the employer contribute for each employee a gradually increasing percentage of that employee's wages. 1 per cent through the first five years, 2 per cent through the second five years and 3 per cent through the third five years and so on. He would have the employee contribute not only because the fund without the support of the workers cannot be permanently depended upon, but because of the psychology of it.

Free pensions smack too much of charity to please employees. They don't want charity, they want good wages as long as they are able to work and they want to have reserved for them enough of those wages to keep them in comfort after they are too old to work or become ill. They want this as a matter of course and as a matter of business. There is no doubt as to the willingness of labor to enter upon an arrangement of this sort if the right methods are employed. There are reports on record to the effect that 85 per cent of the employees are self-confessed failures because they have not under present conditions of living and working saved anything against illness, old age or death. They are on the road to the loan sharks and their families are in line for destitution or for the humiliation of dependence on private or public charity.

"Social insurance, I believe, should cover the entire economics of the worker. There is a great deal of discussion of legislation to bring this about. I maintain that it can be better done through co-operation and that it cannot be done satisfactorily in any other way.

"We have developed salesmanship until it has become a national menace. The real estate man with suburban lots to sell, sugars his proposals with the enticement of a small sum down and the balance in installments. Some merchants search the city over to find to whom they can extend credit. They know the weakness of women for pretty things. They know the temptation to buy and have the thing charged. The automobile dealer finding trade a bit slow, baits his car with a 25 per cent cash payment proposition and the man who longs for a motor but cannot afford it buys and finds too late its cost to maintain and the troubles it brings.

"Few people appreciate the tremendous sums expended on salesmanship. There are tens of thousands of articles that cost more to sell than to manufacture. The public pays the colossal bill. The whole theory of American salesmanship is wrong. The actual practice is to stimulate, then stimulate more and still more. Over-stimulation inevitably brings bad results. The effort of a vast number of merchants and salesmen is to whet the public appetite for something that the public does not need or cannot use with good results in the quantity produced.

"Installment selling of everything from automobiles to furniture has been overdone to such a degree that it has wrecked homes, fomented discord and entailed suffering far beyond what is generally known. The ordinary worker has not got the ghost of a show. False standards of salesmanship have raised the price of everything far beyond legitimate levels. Temptations, enticements, decoys have led to such an expenditure of money for luxuries that in multitudes of cases there is not enough left for necessities.

"An employer in New York, a short time ago, called

his workers together and informed them that he had been putting the shoe on the wrong foot. He had been paying them wages and requiring them to take the most difficult action known (which is taking money out of the pocket and putting it into the bank) in order to make provision for the future. 'Hereafter,' he said, 'I will pay no wages. I will deposit your money in the bank every Saturday night, upon which you will be guaranteed a good rate of interest and you will have to draw out what you need.' The result is that all these employees now have bank accounts; some have $1,000, some $5,000, some $10,000, with an average of over $5,000 per employee. Saving money automatically is the only plan that will work in America at this time, and unless it is practiced the nation will come to the same goal that the individual spendthrift is bound to reach in the end. Every person feels that thrift is commendable; but with most people it involves a struggle every week to get something out of the remnants of wages, to make some sacrifice, or perhaps even to find a bank open on Saturday night when there is a chance to add something to the nest egg. All this work is entirely unnecessary if thrift can be organized so that it will take care of itself; and the possibilities of truly organized, automatic thrift are so great that everybody ought to help bring it about for himself and others.

"The various attempts that have been made to improve the situation and bring about more stable labor conditions through the medium of workingmen's compensation laws, old age pensions and welfare work, while good so far as they go, do not appear to have accomplished the desired result in that they do not take into consideration the basic principle that the employee and employer have mutual interests that must be served and any plan that does not imply the mutual efforts of both interested parties cannot help but fail of satisfactory results.

"The following industrial pension system seems to offer the best solution of this difficulty.

"Let the employees of a plant be organized into an association with a Board of Directors elected by the local secretaries of each department.

"Let the employee contribute 5 per cent of his weekly wage and the employer contribute an amount equivalent to from one to nine per cent of such employee's wage, the exact percentage being based upon the length of time the employee has been in the plant and increasing one per cent each five years that he continues with the firm as the following table indicates:

Years of service.....	1-5	5	10	15	20	25	30	35	40
Percentage	1	2	3	4	5	6	7	8	9

The fund thus created is deposited with whatever one of the insurance companies the employee's organization may select and the employee at once obtains through the medium of an organization directly under his own control and supported in part by his employer the maximum of protection against any 'time of need.'

"So long as he remains with one firm he is provided with

(a) A savings scheme
(b) A loan privilege
(c) A benefit fund
(d) A life insurance policy
(e) A pension guarantee for his old age

and these benefits increase in value with the length of his service.

"An apparent difficulty that might strike one in considering the plan for the first time is that some employees may not want to participate. There need be no compulsion. If a man does not want to go in, he can stay out. But participation comes as soon as the plan is understood. A new employee comes to work after the plan is started, say. He is told that he can have five per cent of his wages taken out every pay day and put into a savings fund. Perhaps he is suspicious of the scheme, or doesn't care to save money, so he draws all that is coming to him. One day, after he has been there a month or two, the workers in his department hold an election for a local secretary to represent their interests in the savings fund association. He is asked to vote.

"'Why, I have no vote!' he says in surprise. 'I'm not in that thing, you know.'

"'You have a vote just the same,' he is told. 'This fund is managed by the employees themselves—everybody has a vote.'

"That gives him a new viewpoint on the proposition. It looks square. He investigates the details more fully and when he has made up his own mind in his own way he usually comes in.

"When employees are ready to adopt such a plan, they form an association to control and manage the funds. Each department in the business elects its local secretary, who attends to clerical details, and these secretaries elect a general board of directors.

"All the money contributed by the employees and employer goes into regular life insurance, on a special plan which is an amplification of the group insurance plan. (No physical examinations of employees are necessary.) By converting the fund into insurance it is removed from the risks of the employer's business. Each employee has his own contract with the insurance company, a policy carrying loan and surrender values and other benefits. His savings and his pension are safe, no matter what happens to the concern he works for, or how long he stays with that concern, or what happens to him.

"Let's suppose that he goes to work at twenty and stays with the same employer until he is sixty-five. For the sake of convenience we will figure his wages at three dollars a day all the time. In reality, of course, he is going to be worth more with each year's experience, and will be promoted and get increased pay. Every dollar automatically adds to his savings and security. Every hour he works overtime contributes to the grand totals.

"With the first week he draws his wages and lets ninety cents remain with the paymaster, or five per cent of $18, and his life is at once insured for $2,217. At the end of his first five years he has paid in $234 and his employer $46.80. If he falls sick then and needs the money, he can borrow $168 on his insurance. If he is discharged, or quits to work elsewhere, his insurance has a cash surrender value of $126—for five years he has had insurance protection, remember. And if he prefers to convert it into paid-up insurance he need pay no more to the insurance company, and the latter will hand his family $328 whenever he dies. If he lives to the age of sixty-five, he can have a pension of $66 a year.

"By the time he has worked twenty years the plan is showing its more startling values. For now his employer is contributing more. He has paid in $936 himself, his insurance is $2,977, his loan value $1,268, or $332 more

than he has put in, and the cash surrender value $1,008, or $72 more.

"When he is ready to retire, at sixty-five, his life insurance is worth $7,341. He can draw in cash such money as he may need, if he wants it, or, if he prefers a pension, he will get $677 a year as long as he lives—more than two dollars a day for a three-dollar man. If he chooses the pension, as he should, for this is a pension plan, and dies before ten years, the insurance company pays this pension to his family until ten years from the time it began.

"He is protected against practically every emergency during his whole working life, and until his death, and his earnings have yielded remarkable interest, growing as the plan continued. For what the employer contributes comes to twenty-two per cent the first year, and increases to an average of one hundred per cent for the whole period at the forty-fifth year, and to this is added $3,129 interest guaranteed by the insurance itself. No form of investment that he could make elsewhere, in a savings bank or life insurance company, would return such profits as this automatic thrift through co-operation with his employer.

"These assurances relieve the employee of all worry about the future and enable him to devote all his attention and enthusiasm to his work, while the knowledge that the employer is contributing equally with him to safeguard the future holds him to the one position.

"These awards are pronounced actuarially sound on the authority of recognized experts.

"I sometimes wonder if we realize what the long service worker means to our industries. We have a country of abounding natural wealth and cheap materials for the production of the most of the necessities, compared with the resources of the great industrial countries of Europe. In France, Germany, England, Switzerland, Belgium, Austria, Italy, and other countries abroad the workers and employers have to counterbalance high cost of materials by lower wages, longer hours, greater skill, and a devotion to the steady job so grim that few men dare to shift from one place or trade to another, even in the hope of bettering themselves. They must stick at one thing, very often the thing their fathers worked at, and by skill and industry turn out products that compete with ours in the markets of the world, regardless of all our natural advantages. That is what industrial stability has done for Europe. For my part, I prefer the restless energy, the wider opportunity, and the greater liberty to take a chance which is characteristic of American industrial affairs. But we must not think that our shifting is energy or opportunity. It is time to transform the roaming, casual, half-trained workers who go from one factory to another and to eliminate from our industrial life the heavy tax we pay for shifting. These casuals must be transformed into workers who are really skilled, trained technically, competent, home-owning, secure citizens. We have got to do it if we are to hold our own in world trade, and I believe the way to begin is through the scientific, automatic, cooperative saving of money."

The firm of Edward Jefferson & Brother has been dissolved by the withdrawal from the firm of Mordecai Jefferson. The business will hereafter be conducted by the remaining partner, Edward Jefferson, under the firm name of Edward Jefferson.

Annual Meeting of the Cotton Manufacturers' Association of Georgia.

At a meeting of the officers of the Cotton Manufacturers' Association of Georgia, recently held in Atlanta, it was decided to hold the annual convention of this association at St. Simons Island on June 8th, 9th and 10th. Arrangements are being made to make this a social outing as well as a business meeting, the business portion of the meeting being devoted to the Friday afternoon and Saturday morning sessions, and the balance of the time devoted to social recreation and rest. It is the avowed intention of the members of the association to bring their wives with them on this trip, and arrangements are being made for the entire party to visit Jekyl Island as well as other diversions in the form of steamboat trips and other features. Outside of the regular membership, invitation will be by card.

The Brunswick Board of Trade is making arrangements to assist in the entertaining of this association, and the Southern railway officials have arranged to carry a special equipment of state-room cars from Atlanta to Brunswick and return, which will make the night trip each way much more private and pleasant for the ladies of the party. The prospects seem good for a record attendance.

The Fumigation on Baled Cotton.

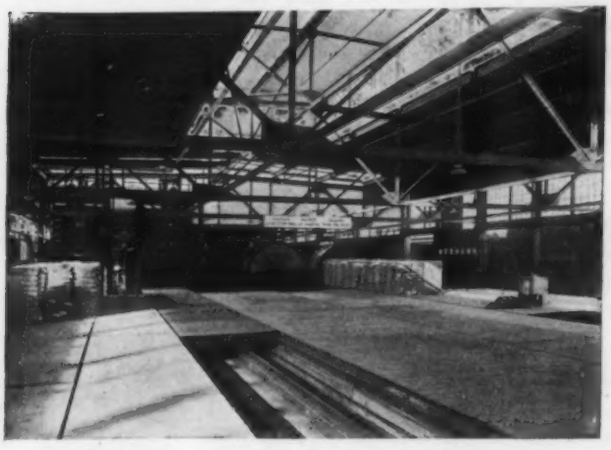
About a year ago the federal government put into effect rules and regulations requiring the fumigation of all imported cotton. The object of the disinfection of the cotton is to destroy larvae of the pink boll worm, which is a native of India, the Orient and Hawaiian Islands. It deposits its eggs in cottonseeds where they hatch and feed on the seeds for periods as long as seven months.

One of the first plants to be erected to handle this problem on a commercial scale is that of The Vacuum Company,

in Somerville, Mass. This plant was designed by Charles T. Main of Boston. It consists of a high one-story structure 428 feet long and 72 feet wide, and is designed to carry out in the most economical manner possible the method of disinfection required by the Horticultural Board of the United States Department of Agriculture. Briefly, this method requires that the manufactured cotton and cotton waste must be placed in a suitable fumigating chamber where it is subject to hydrocyanic acid gas for a definite period. (This method was described fully in the April, 1916, number of COTTON). The Somerville plant was especially designed to meet these requirements. Adequate ship-

ping facilities are provided by freight sidings connected in a Y, serving both sides of the building, and connected with the main line of the Boston & Maine Railroad. The freight cars are handled on this siding by means of an endless cable along the tracks which is operated by an electric hoisting motor.

Foreign cotton arriving in the Port of Boston before it can be released from the jurisdiction of the Customs officials must be properly fumigated. In order that the importer be delayed as little as possible, and to protect him from loss or damage by fire, the new plant is designed to facilitate rapid handling of the bales sent for fumigation, and



is carefully fireproofed. The cotton storage sheds are located at each end of the building. From here the cotton is conveyed on platform cars running along depressed narrow gage tracks to the fumigating retorts. The tops of the flat cars are level with the storehouse floors, a feature which facilitates loading and allows the cars to be used as bridges between platforms when they are not being used for other purposes.

The same company has recently established another cotton disinfecting plant at Brooklyn, N. Y., to handle foreign cotton coming through the New York Custom House.

At the annual meeting of the Crompton & Knowles Loom Works, held recently, Charles H. Hutchins retired as president of the concern and Lucius J. Knowles was elected to succeed him. Other officers and directors elected were: Vice presidents, Earl E. Howard, Irving H. Verry and Frederic W. Howe; treasurer, Edward F. Green; assistant treasurer, Fred J. Bowen; clerk, Earl E. Howard; general manager, John F. Tinsley; general counsel, Charles M. Thayer; board of directors, Charles H. Hutchins, chairman, Thomas T. Booth, Fred J. Bowen, George Crompton, Homer Gage, Albert A. Gordon, Jr., Edward F. Green, Earl E. Howard, Frederick W. Howe, Arthur K. Hutchins, Chas. F. Hutchins, George F. Hutchins, Lawrence B. Jenckes, Frank P. Knowles, Lucius J. Knowles, Henry H. Merriam, John B. Syme, Charles M. Thayer, John F. Tinsley, Irving H. Verry and George E. Warren; chairman of development board, George F. Hutchins; purchasing agent, Thomas T. Booth; assistant purchasing agents, Philip B. Heywood and Frank E. Colesworthy; superintendents, Worcester plant, Albert A. Gordon, Jr.; Providence plant, Henry S. Favor; cashier, Frank E. Stimpson.

A Portable Garage.

"Ready-Bilt" portable steel shelters have stepped out of the class of temporary make-shifts into a comparatively new and previously unexploited field, namely: that of portable permanent buildings. Owing to the rapidly increasing real estate valuations there is a vast and constantly growing demand for structures which are attractive, durable and practical, and which when necessary or desired, can be moved in convenient sections and re-assembled elsewhere at an economical cost.

With this object in view, but not for a moment losing sight of the permanent feature, the "Ready-Bilt" portable steel buildings were designed and so constructed as to be rigid, substantial and serviceable. Whether intended for use as a cottage, office, warehouse, garage, school room or something else, the dependable strength and service qualities will be found amply provided for, while the appropriateness of appearance will ever be conspicuous.

Their construction throughout is exceedingly practical and simple. It has been the aim of the manufacturers to so design and arrange the various members and sections so that even the most unskilled persons can assemble them properly by following instructions. Erecting plans and drawings are furnished with every building. In addition, all parts are marked with a letter or number, and corresponding numbers and letters on the directions and erecting plans indicate just where and how each piece goes up.

In any building, whether for temporary or permanent purposes, durability and dependability are of supreme importance. It is poor economy to stick up an unsightly and combustible wood building, with possibly a paper roof or a semi-steel building consisting of a wood frame and light gauge corrugated sheets. In some cities garages or shelters of this nature are not tolerated, and even though they were, it is poor business policy, because eventually you will be obliged to tear it down and erect something substantial, thereby losing your initial investment. These steel buildings are not only permanent, but as they are absolutely non-combustible they require no insurance.

An automobile is a valuable piece of machinery, representing a considerable investment, and should be properly housed when not in service. It is also desirable that some consideration should be given to the artistic appearance of the garage. It should at least harmonize with its surroundings, and it is quite appropriate to have it more embellished than the adjacent residences. The panelled formation of the siding and roofing sheets of these buildings is very attractive and produces an effect which is an improvement to any surroundings.

These garages are made in all sizes; any width up to 20 feet and any length in multiples of 2 feet. They may also be procured in the multiple building form for the mill yard, each section separated from its neighbor by a suitable partition. If desired, these partitions may be omitted making one long building with plenty of clearance between the cars.

"Ready-Bilt" garages are manufactured by The Canton Metal Ceiling Co., Canton, Ohio, who have prepared a handsome illustrated booklet showing styles, construction details, sizes, etc., and which will be sent free of all charges to interested inquirers.

Mill Conditions and Market Reviews.

Southern Mill Situation.

The mills of the South are paying very little heed to rumors, and rumors of rumors, but are steadily grinding along and getting out a good production while it is in demand, at prices that return fair profits. New mill construction, and changes in old equipment that tend to bring that equipment into a suitable condition for the manufacture of those articles which are most in demand, are still being carried on. In the meantime, many mill officers are investigating group insurance and other similar plans for the benefit of their operatives and tending to increase their continuity of service.

A new mill of 5,000 spindles is to be built at Blue Mountain, Ala., which is a suburb of Anniston, by the American Net and Twine Company. It is really a new addition rather than a new mill, as the present mill building is to be enlarged for the installation of additional machinery, the directors having authorized the expenditure of $200,000 for this purpose. This mill now operates 18,000 spindles. H. F. Williamson is general manager. In addition to the mill structure, a number of new cottages will be built for the operatives in the Blue Mountain mill village. This village has won a reputation of being a model of cleanliness and beauty.

A community house is being equipped at the Rushton Cotton Mill at Griffin, Ga., under the direction of the Rev. R. J. McElreath, and will be used as a welfare building and club house.

The Bismark Mills have been incorporated with a capital stock of $50,000 at Carthage, N. C. The incorporators include J. R. McQueen of Pinehurst and Dr. A. L. Blue of Carthage.

The Baldwin Cotton Mills, at Chester, S. C., which we reported recently as largely improving their property, have increased the capital stock from $400,000 to $700,000.

The Elmira Cotton Mills of Burlington, N. C., are preparing to change over their plant to electric drive. Power will be purchased from the Piedmont Electric Co., and contracts for the motors and wiring have already been placed. Some additional machinery is to be added.

The Wateree Mills, of Camden, S. C., have been sold to the Lewis Mfg. Co., of Walpole, Mass., and will be operated by them.

The Jackson Mills at Iva, S. C., have contracted with the Southern Power Co., for electric power to use as auxiliary power in the driving of the mill to augment the present steam plant.

The Victor-Monaghan Mills are placing new model Draper looms in three of the plants. These are to take the place of the old style looms which will be thrown out. The following will be installed: Walhalla plant, 390; Seneca plant, 450; Ottaray plant, 190.

Mill No. 2 of the Ivanhoe Manufacturing Co., Smithfield, N C., is to be changed to electric power drive as soon as practicable. Mill No. 1 has recently been remodeled, and the electric drive installed, and new winding machinery has been added to the equipment.

The Osage Manufacturing Co., Bessemer City, N. C., will add six spinning frames to its present equipment of 15,000 ring spindles, according to report.

The Peerless Manufacturing Co., Lowell, N. C., is now carrying out its plans for doubling the capacity of its plant, installing 2,016 spinning spindles and 1,008 twisting spindles.

The Elizabeth Mills of Charlotte, have taken out permits for the erection of not less than 24 new mill dwellings for operatives, the contract for the work having been given to J. D. Stroupe. These employees' homes will be built as follows: Ten will have three rooms; 10 will have four rooms and 4 will have five rooms. The total cost of the 24 new homes for mill employes will be $15,000.

The Piedmont Commission Co., a subsidiary corporation which handles the product of the Fidelity Mill, of Charlotte, N. C., has purchased property adjacent to the mill and will erect a weave shed for the installation of 180 Damask looms, which have already been purchased.

The Peerless Manufacturing Co., Lowell, N. C., will install 2016 spinning spindles and 1008 twisting spindles to double the capacity of its cotton mill. It is understood to have purchased this additional new equipment.

A $4,000 equipment with a daily capacity of 20 bales of renovated and refined damaged cotton will be added to the pickery of the Spartanburg (S. C.) Bagging & Waste Co. This new machinery has been ordered.

Plans have been begun for the permanent improvement of Arkwright Mill village, one of the largest factory communities in Spartanburg. The village, according to the announcement, will be lighted by electric lights similar to those used in lighting the remainder of the city, and the streets will be paved and sewerage mains to serve all the streets of the village will be placed. Improvements are already being made in the interior of the mills. All the walls and ceilings are being repainted. A modern school building has recently been erected by the mill people at a cost of over $10,000.

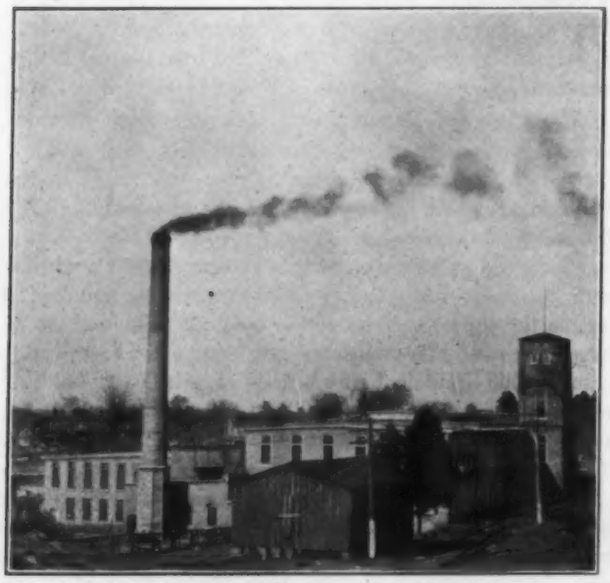
C. W. McCord, of the McCord Co., manufacturers of cotton yarns, mop yarns, etc., with main office at Louisville, has announced the final close of a deal whereby the company has taken over the plant, business, etc. of the Kentucky Cotton Yarn Company, of Louisville. The deal was actually closed on November 16, 1916, but the plant was not taken over until March 1st and the matter was kept very quiet in order to hold the employees of the local plant.

The McCord Co., a few months ago lost its large plant at Grahampton, Ky., by fire, and started at once to rebuild the plant. The machinery was so badly burned that it was useless, and negotiations were started which culminated in taking over the plant of the Kentucky company. This plant will run to June 1, 1917, when it will be closed and the machinery shipped to Grahampton, where it will be installed in the new plant, which will be ready for machinery by that time.

Reasons for moving the machinery and rebuilding at

Grahampton are that the McCord Company has a large force of trained workers at that point, and can obtain labor more cheaply than in Louisville. In addition it has water power, obtained from Otter Creek, and can operate far more cheaply on this power than on coal or electricity. The water supply is never failing, having been steady for fifteen years that the company operated there. The old plant at Grahampton had a capacity of 20,000 pounds a day, or 40,000 on a day and night shift. The machinery from the Louisville plant will increase the capacity to 50,000 pounds for the double shift. Seth Nones, formerly with the Kentucky Cotton Yarn Co., is manager of the local plant.

The Mary Leila Cotton Mill, at Greensboro, Ga., an illustration of which is shown herewith, has completed the



new addition reported sometime ago. Into this new addition has been moved all the weaving machinery of the mill. The end of the new addition may be seen at the left of the picture, just back of the power plant. This addition connects with the main mill and makes a very light and well equipped weaving department. The carding and spinning departments of this mill are operating double shifts and turning out a splendid product under the active superintendence of J. Stirewalt.

Additional new machinery has been ordered for the several plants of the Bibb Mfg. Co., with main office at Macon, Ga. Some of this equipment is intended for the Columbus plant of the company, and other parts of it will go to the new Porterdale plant of the company.

Plans and specifications for a large and handsome auditorium and welfare building to be erected by the Tucapau (S. C.) Mills have been prepared by L. D. Profit, a Spartanburg architect. The building will be two stories and basement, of brick and concrete construction. The basement will be used for the community barber shop, pressing club and other businesses of this nature. The second floor will be given over to the spacious gymnasium, reading rooms separate for men and women, baths, etc. The third floor will be given entirely to the auditorium and space has been reserved for a lodge room which will be used jointly by the various lodges at Tucapau.

It is reported that Clarence R. Miller and R. W. Higginbotham, of Dallas, Tex., are promoting a new cotton mill company which will be capitalized at $500,000, and which will employ approximately 500 persons in the manufacture of denims. It is further stated that the Fort Worth (Texas) Overall Factory, the Miller Mfg. Co., of Fort Worth, and the Kingsbery Mfg. Co., will have stock in this denim factory and are assisting in the promoting of the enterprise.

The Thatcher Spinning Co., Chattanooga, Tenn., has received 11,000 spindles with carding and twisting machinery for preparatory work, it is reported. This is probably the equipment ordered some time ago and just being delivered.

The New Hanover Thread Mills, Gastonia, N. C., will soon determine plans for their combed yarn mill, the company's organization for this purpose having been recently announced. W. T. Rankin, president, has completed the purchase of a 50-acre site for the plant and a 4,000 spindle equipment is to be installed.

The Ranlo Manufacturing Co., Gastonia, N. C., has begun the construction of its main building, for which contract was recently awarded to J. D. Granby, of Charlotte. This $500,000 company, whose organization was recently mentioned, will have a 6,000 spindle equipment to spin fine combed yarns. Its building will be 400 feet long by 132 feet wide.

Announcement.

The publicity committee of the Southern Textile Association, which is an association composed of more than one thousand overseers and superintendents of southern mills, announces that the annual meeting of this association will be held at Wrightsville Beach, North Carolina, near Wilmington, on Friday and Saturday, June 22nd and 23rd.

One of the greatest attractions of Wrightsville Beach is Lumina, the famous pavilion, owned by the Tidewater Power Co., and situated right at the water's edge. The upper floors of this pavillion command a view of the ocean for miles. It contains a magnificent ball-room with 6,000 square feet of dance floor space, while the upper verandas cover 25,000 square feet. Every night is a dance night at this pavilion, and on Sundays a special concert is given by the orchestra connected thereto.

Arrangements have been made with railroads connecting to Wrightsville Beach whereby a summer rate will be granted on the tickets of those desiring to attend this convention. Also, arrangements have been made with the railroad companies to attach a number of extra Pullman cars to the different trains throughout the Carolinas and Georgia, thereby furnishing the most comfortable and convenient arrangement for a very pleasant outing.

A large number of the members have already intimated that they expect to take their families with them and remain over Sunday, as well as during the two days of the meeting, thus making a social outing as well as a business meeting of the affair.

The editorial department of COTTON would like to get the present address of B. G. Rhyne, and will appreciate it if Mr. Rhyne or any of his friends will communicate this information upon reading this notice.

New England Mill Situation.

The cotton mill situation is stronger than it was a month ago. The mills have been able to book up very freely in the interval and the scattered stocks have again been dissipated. Fall River print cloth mills are sold ahead for the next two months for more than half their possible output and they have been slower in selling than mills in other sections, for any late contract deliveries. Stocks on hand at the middle of the month were as low as at any time last year. The print cloth demand of the month was rather better than the call for other goods and many special cloths made of print cloth yarns sold freely for spot and for contract delivery, contracts rarely running beyond July.

There has been considerable business booked on odd widths of print cloths, running from 31 to 36 inches, these cloths evidently being used to meet a price condition in many of the staples hitherto offered in 38½ inch and 40 inch widths in the gray. There has also been considerable odd construction trade in narrow cloths, principally for printing and converting and to be exported. Here again is an effort to meet a price condition resulting from the rise in costs. In anticipation of further preparedness demands there has been considerable business placed on special cloths for hospital supplies. A very considerable business has been placed on cloths for aeroplanes and balloons, these goods being made of very fine combed yarns and very closely woven in order to secure the strength tests demanded.

The mills that make duck and khaki materials are very well employed, some government contractors having come forward and placed orders in anticipation of requirements that are now clearly defined. It is expected by denim manufacturers and others that khaki may be worn more generally in future by civilians, just as has proved true in Europe. Many of the new khaki fabrics will not be as coarse as those hitherto prepared.

Cloths in sateen and twill weaves have been in better demand and they are being used for converting and printing. The fine goods mills have not been taking as much business relatively as the print cloth mills yet they have found business free enough to keep them very well employed. A great many special cloths are being made in fine cloth mills, most of them being in semi-fancy weave, and many of them manifesting the desire on the part of wearers of cotton fabrics to secure durable materials. Fancy poplins and gaberdines have been ordered well for fall and out of the experience gained in making fancy heavy cotton skirting materials some mills have evolved special constructions in all cotton that are likely to last in the markets as long as wool scarcity continues.

The colored goods mills continue to hold a great deal of business in hand which they can take whenever they are ready. The sold up conditions on many dress ginghams, shirting chambrays, fancy domets, and other colored cottons has led to the placing of the goods at value and buyers are becoming anxious concerning the probability of getting supplies in the event of the activity in print cloths and other gray staples forecasting a fuller activity in other lines. The Amoskeag Company advanced its domets after having booked the largest advance business at the highest prices ever received. Staple ginghams were placed at value after they had been bought liberally at 9½ cents.

Considerable of the firmness in colored cottons has been attributed to the abnormal costs of fast dyes used by cloth manufacturers. A printer paid $16,000 recently for a barrel of indanthrene dye that used to cost about $300 before the war and was thankful to get the opportunity to purchase at the price asked. Some colored goods mills have about exhausted their foreign dye supplies and the domestic industry has not yet reached the point in specialization where all the varying shades that have become standard in foreign dyes are made here.

The bleacheries and finishing plants have been busy but they have not accumulated the same volume of forward business they had a year ago at this time. Converters have been going ahead more conservatively. They have many gray cloths warehoused awaiting the time when they can give definite finishing orders. The bleacheries and finishers are also carrying stocks of finished goods in warehouses awaiting shipping instructions from their owners. The congestion in warehouses has been due in great part to troubles in shipping goods, the railroad congestion in New England having continued, due to the congestion in and around New York.

The printers are very busy. It has been amazing to printers to find how work has come in. Early in the month the American Printing Company opened its lines of printed shirtings in 32 and 36 inch widths for the manufacturing trades for spring delivery. The prices were on the highest levels ever named, running from 10½ to 15½ cents for plain goods, and 14½ to 19 cents for fancy weaves, printed. At these prices, orders flowed in so freely that at the end of a week's selling several lines were withdrawn altogether and others were advanced from ½ to 1 cent a yard. A similar experience was encountered in the varied lines of spring shirtings, printed and woven, handled through Amory, Browne & Co., and made in different New England mills.

Some of the printers have not been able to sell some of their standard products in as large volume as usual owing to the advanced prices and the hesitation of jobbers to take them in stock at a high level. Yet there has been so much other special business offered that they are all well employed and they are prepared for a steady run during the summer months. The export demand for printed goods continues a feature of large importance in sales and some of the larger printers of New England are now producing a fourth of their output for foreign use. It is this element in the situation that makes it difficult for home buyers to appreciate the character of the scarcity on many cloths.

New England cotton mills and merchants representing them continue to show increasing interest in the development of foreign markets. The business is not being done in the old way although all old connections that are at all active are being retained. But mills are not depending on export brokers or export commission houses to make their goods known in foreign markets or to arrange credits and other details for them. Where they are not sending direct representatives they are making direct connections with foreign mercantile houses of standing and good executive ability to handle their products in given territory and on the part of the mills, every effort is being made to supply just the sort of goods wanted, so far as widths and packaging are concerned. This movement started first in the

houses that already had a moderate export outlet, and it was stimulated by the satisfactory results obtained in selling American knit goods in foreign markets.

The sport stripe vogue in the markets has helped the late season wash goods trade a great deal but it has hampered the distribution of many of the semi-staple voiles and lawns, both dyed and printed. It has injured the white goods end of the business less than some others. Being a fashion vogue entirely, it may pass quickly and before the selling season ends.

The cotton blanket situation continues very strong. The large blanket mills have all the business they can take care of and there seems to be no limit to the demand for the better qualities of fine wool finished blankets. Both plain and fancy styles are wanted and few buyers have enough on order to meet the requirements that have become defined early in consequence of the advance demand from retailers. The export demand for cotton blankets and fine napped cottons in lighter weights is a very strong factor in the market. The Canadian demand has been large and the South American business is good.

During the month some price concessions were made by quilt mills to induce the placing of fall orders. The lower prices were made on crochet goods and it is thought that this resulted from an accumulation in some quarters where values were run up inordinately high last fall. The concessions were not general and did not include all products even in the mills affected. Satin quilts, for example, held their value and have sold steadily. It is probable that the domestic quilt production is in excess of normal requirements, especially on the low priced goods, and this has been brought about in large part by the application of automatic looms to coarse jacquard weaving and the additions to the loomage of some large producing units.

The combed yarn markets turned very strong during the month. Indeed, many spinners questioned whether they were ever very weak outside of dealers' circles as all the mills have been able to pick and choose their trade, especially on fine combed qualities. Tire fabric yarns in single 23's have sold at 58 cents in half million pound lots. Many mills that can make finer than 100's have declined business on anything beyond August until prices are still higher and until it is clear what the fine Egyptian cotton and sea island cotton crop conditions are to be for another year.

Among mill investors an impressive fact is that the margin of profit can hardly be as great this year as it was last year owing to the great rise in producing costs. No serious danger from labor troubles is anticipated but costs other than labor have become extraordinary. In many mills the factor of supplies for mills was hardly considered in the matter of pricing cloth, when market conditions were favorable, but with coal, leather, starch, and hardware supplies far more than double in a number of instances it has become necessary to figure on supplies closely before accepting late business unless the price covers everything.

The Aragon Cotton Mills at Rock Hill, S. C., have closed a contract with the Fisk-Carter Construction Company of Greenville for the construction of 75 additional cottages for the operatives of the mills. This is to allow the mills to run double shift. These houses will be equipped with running water and electric lights and in other ways be thoroughly up-to-date and handsome.

Lancashire Notes.

BY AN ENGLISH CORRESPONDENT.

The deputation which the British Cotton-Growing Association asked the Prime Minister to receive with reference to the stimulation of cotton cultivation within the British Empire, has now interviewed the parliamentary secretary to the Board of Trade. The chairman of the association, J. Arthur Hutton, detailed the work which the association had done and claimed that it had proved that cotton sufficient to meet Lancashire's requirements could be grown within the Empire. What was needed was capital, and Mr. Hutton argued that the importance of the trade was such that the Government would be fully justified in lending financial assistance. Mr. Roberts, replying, did not hold out any hope of such assistance during the war. The war, he said, was putting an enormous strain on the treasury and the prosecution of the war with the utmost vigor would have to take precedence over everything else. He endorsed the suggestion of the deputation that a committee should be formed consisting of representatives of the association, the Government and the trade interests. The question could then be jointly discussed and, in the future, something might be done.

The British Cotton Growing Association has issued a very interesting Memorandum of the Development of Cotton Growing in the British Empire, in which it elaborates the case for the resolutions passed at the conference of which I wrote last month. Supporting the contention "that the present situation as to the supply of cotton is most urgent, and requires the immediate attention of His Majesty's Government" the memorandum gives the following table of average prices of middling American, which indicates how the demand is steadily exceeding the supply:—1895-1899, 3.76d.; 1900-1904, 5.44d.; 1905-1909, 5.78d.; and 1910-1914, 7.16d.

In no single year since 1875 until 1909-1910, has an average price so high as 7.0 d. been recorded. At the present time the world calls for its supply of cotton to be added to and increased each year by at least 600,000 bales, and probably 800,000 bales of 500 lbs. each. In normal times Great Britain requires for her own use (deducting raw cotton re-exported) about 4,000,000 bales of 500 lbs. each. Of this quantity 80 per cent comes from America, 15 per cent from Egypt, and 5 per cent from elsewhere. There is at present no other country in the world which can give Lancashire any considerable quantity of the right kind of cotton to replace the 3,200,000 bales she draws from America. "On the whole," states the memorandum, "it is strictly true to say that the regular Lancashire trade depends today upon American cotton just as much as it did at the time of the civil war." After quoting statistics to show the increased consumption of American mills in recent years, the memorandum adds: "It is, of course, impossible to predict whether America will retain, when peace comes, any considerable portion of the extra trade she has lately secured; but it is certainly alarming for the Lancashire cotton trade, practically dependent upon American cotton, to find that a year has now arrived when America has reached the point of herself using more than half her own crop."

It is contended that it is essential for the welfare of

the colonies that cotton growing should be developed. "The British Cotton Growing Association, in the fourteen years of its existence, has been doing work of a pioneer character. Incidentally it has met with some disappointments, but these have had their use in indicating some of the conditions which limit the area where the growing of cotton is commercially possible. The main result of the work done by the association is that they have conclusively proved that cotton can be satisfactorily grown in increasing quantities in several parts of Africa, notably in the Sudan, in Uganda, Nigeria and Nyasaland, and also in the West Indies. And moreover they have also proved that in all these countries the cotton that will grow to the best advantage is cotton very well suited for use in Lancashire mills in place of the American cotton now used." In Egypt, cotton and cotton-seed form 90 per cent of the exports of the country. In the Sudan cotton is already more than 10 per cent of the exports, and in Uganda nearly 70 per cent. In the West Indian Islands cotton forms over 30 per cent of the total exports of St. Vincent, Montserrat, and the Virgin Islands, and is an important factor in St. Kitts-Nevis and Barbadoes. In India, even as things are, cotton is among the first three of the articles exported and forms more than one-tenth of the whole.

The two propositions which the Association urges the government to take in hand with the least possible delay, are the development of the Gezira Plain in the Sudan and the extension and improvement of cotton-growing in India. If the irrigation works already authorized by the Government in the Sudan are pushed forward rapidly, it is estimated that the water supply will be available in two years' time, and that in 1922 the whole of the preliminary area of 300,000 acres will be brought under cultivation. This area should produce about 80,000 bales of 500 lbs. each per annum. It is hoped that the cultivated area will extend rapidly afterwards but this will depend on two factors, namely, a sufficient population and a supply of water from the Blue Nile, part of which is required by Egypt. Many years must elapse before the whole of the Gezira Plain can be brought under cultivation, and further investigations of the conditions will be necessary, and more especially as to the relative allocation of water to Egypt and to the Sudan. "The Gezira scheme," declares the memorandum, "is the only proposition which offers any prospect of producing any appreciable quantity of cotton of high quality in the immediate future, and therefore it is of paramount importance that not one moment should be lost in pushing on its development with the least possible delay."

The memorandum also urges that immediate steps should be taken to improve the quality and increase the quantity of Indian cotton. Indian cotton, it states, is at present suitable for only the lowest counts and, in consequence, it realizes only very poor prices, probably being less valuable than American by 20 per cent. If the production of cotton could be improved so that the value per acre were equal to that of America, the total value of the Indian crop would be trebled and there would be added to the purchasing power of India about £70,000,000. A very full investigation should be made by the British and Indian governments and much more should be done in the near future than has been done in the past. There is probably the same room for improvement in short and coarse cotton as in the finer kinds, and the aim should be to so largely increase the production per acre in those districts where coarse cottons are grown as to set at liberty large areas elsewhere which might be suitable for the finer and more valuable kinds. It is confidently hoped that, in a comparatively short time, the production of short cotton could be largely increased and that at the same time several hundred thousand bales of cotton suitable for Lancashire could also be produced. At the present time 5,595,000 bales of 500 pounds are grown in the Empire, of which 4,000,000 are short staple raised in India, 1,595,000 medium staple, 1,520,000 long staple and 5,000 extra fine.

What is asked by the British Cotton Growing Association is that the government should appoint a committee to consider the best method of continuing and developing the work inaugurated by the association. Much of the work has been done in the past to the best of its ability by the association itself. The business, however, is now too large for its resources. "It seems absolutely necessary," states the memorandum in conclusion, "that the committee suggested should be appointed as soon as possible, but as it would be ruinous to the young industries which are now developing so rapidly in Nigeria, Uganda and the Sudan if they were left meanwhile without support, it is urged that temporary financial support of a substantial nature be give under government supervision to the British Cotton Growing Association, and that no time should be lost in giving effect to the resolutions for special work to be done in the Sudan and in India."

In a prefatory note to the memorandum it is stated that "it is understood that the Textile Committee of the Board of Trade, in its interim report on raw cotton, makes recommendations which are for practical purposes identical with the resolutions."

Wages in the spinning and card and blowing room sections are now 20 per cent above what they were before the war. This position is reached as a result of the settlements of the claims to which I referred in my notes last month. The claim of the card and blowing room operatives was for advances ranging from 5 to 25 per cent. Under the award of the court of arbitration set up under the Munitions of War Act, there is to be a uniform advance of 10 per cent and there are to be no more changes in wage rates before August 1st next. The spinners asked for 20 per cent along with the reelers, winders, and cheesers and the beamers put in for 25 per cent. To the whole of these workers the Master Cotton Spinners' Federation offered an advance of 10 per cent and the offer was accepted.

The labor shortage in the preparatory departments has become so acute that an agreement has been arrived at between the Master Spinners' Federation and the Card and Blowing Operatives' Amalgamation under which the rules of the latter body as to the employment of females and young persons are suspended during the war. The trade union rules have so far rendered especially difficult attempts to keep machinery running when men have been called up for service with the colors, and the new agreement will certainly be an advantage to the trade. Notice has to be given by the employers of all proposed innovations and the changes will be carried out partially under the supervision of the union officials. One condition of the agreement, is that the employers shall, when engaging operatives, give preference to those who are members of the union.

The Yarn Market.

The opening of March in the yarn market showed more activity than was indicated in the latter part of February, although the volume of new business put through was not large. Advances in price brought many inquiries for carded knitting and weaving yarns, but the majority of manufacturers were not inclined to pay these high prices unless forced to do so by the pressing need of yarn. Combed yarn prices were irregular, and while there were some good inquiries for carded weaving yarn, the majority of buyers were inclined to be conservative.

The early predictions of the month were verified in the later weeks by increased inquiries and only moderate purchases. Both combed and carded yarns were in demand, and prices particularly of the medium and fine numbers of the carded yarns on cones were climbing skyward, but inquirers did not seem disposed to meet the demands of the spinners unless forced to do so. There was a moderate demand for weaving yarn with prices of this commodity also rising. Bullish sentiment seemed to be upon the increase among the dealers and all spinners were decidedly bullish. One prominent hosiery man stated that "we used to manufacture half hose for 10, 15 and 25 cents retail prices, but under present conditions there is no telling what the prices for retail will have to be, as yarns are making advances of over 100 per cent over the old prices."

The latter weeks of the month showed continued bullishness on the part of the spinners, and fine 2-plies were quoted as high as 91 cents for 50's two-ply combed peeler. However, the demand for the finer numbers was not excessive, and the prices were somewhat fluctuating. There seemed to be a moderate demand for single combed peeler in quantities from a few cases up to 25,000 pounds. Eastern spinners who are sold up on single yarns for from two to four months, were quoting these yarns at from 48 to 52 cents basis of 10's, while others who need business were quoting mule spun single combed peeler on the basis of 45 and 46 cents for 10's. Southern frame spun single combed peeler was quoted at from 41 to 45 cents basis of 10's. There were a number of inquiries for 18's to 30's combed peeler on cones for quick delivery.

The threatened railway strike caused some hesitancy in the market, but its settlement eased the situation somewhat and removed that worry from over the market. The practical declaration of war between the United States and Germany, has had no apparent effect on the yarn market, although the cotton market, after a period of hesitancy, has begun to soar. There seems to be no real reason for this, but it is having its effect on prices. Following are recent quotations on the Philadelphia market:

Southern Single Skeins.

8s	28 @28½	10s	28½ @29
12s	29 @29½	14s	30 @31
16s	31 @31½	20s	34 @35
24s	36½ @37	26s	37 @37½
30s	39 @39½		

Southern Single Warps.

8s	28½ @29	10s	29½ @30
12s	30 @30½	14s	31 @31½
16s	31½ @32	20s	34 @35
26s	37 @37½	30s	39 @39½
40s	52½ @53½		

Carpet and Upholstery Yarns in Skeins.

8-4 slack	29½ @30	9-4 slack	30 @30½
8-3-4 hard twist	27 @28		

Southern Two-Ply Skeins.

8s	29½ @30½	10s	30 @30½
12s	30½ @31	14s	31½ @32
16s	32½ @33	20s	34 @34½
24s	37 @37½	26s	37½ @38
30s	39 @39½	40s	52½ @54
50s	65 @66	60s	75 @78

Southern Two-Ply Warps.

8s	30 @30½	10s	30½ @31
12s	31 @31½	14s	31 @32
16s	32 @32½	20s	34½ @35
24s	37½ @38	30s	39½ @40
40s	53½ @54½	50s	66 @67

Northern Two-Ply Carded Peeler Skeins.

20s	36 @36½	24s	38 @38½
26s	38½ @39	30s	40 @41
36s	44 @45	50s	67 @68

Two-Ply Combed Peeler Skeins.

20s	49 @50	24s	52 @53
30s	55 @58	40s	65 @66
50s	74 @75	60s	83 @85
70s	94 @95	80s	$1.05 @$1.15

Southern Frame Spun Yarn on Cones.

8s	30½ @31	10s	31 @32
12s	31½ @33	14s	32 @33½
16s	33 @34	18s	35 @35½
20s	37 @37½	22s	38 @38½
24s	39 @39½	26s	40 @40½
30s	41 @41½	40s	52 @53
24s tying in	36 @36½	30s tying in	39½ @40

Northern Mule Spun Carded Yarn on Cones.

10s	34 @34½	12s	34½ @35
14s	35 @35½	16s	35½ @36
20s	38 @38½	24s	43 @43½
26s	43½ @44	30s	44 @44½
40s	56½ @57½		

Northern Mule Spun Combed Peeler Yarn on Cones.

10s	45½ @46	12s	46 @46½
14s	46½ @47	16s	47 @47½
20s	49 @49½	24s	51 @51½
26s	51 @52	30s	56 @57
36s	60 @61	40s	67 @68

Cotton Comment.

BY H. AND B. BEER.

New Orleans, March 17th, 1917.

The tendency of market during the past month has been to a higher level, values having scored an advance of about one cent, or $5 per bale, and indications are, barring unfavorable political developments, for the market to work upward in the future owing to stocks decreasing and consumption in the United States continuing on a record breaking scale.

Thus far this season the South has marketed 11,037,000 bales compared with 10,371,000 to even date last season. Of late receipts have been so light that last week's movement dropped to 93,000 bales vs. 159,000 one year ago, whereas last season the weekly movement did not fall under 100,000 bales until the middle of June.

By reason of the scarcity of tonnage and high ocean freight rates, exports recently have been small, last week 35,000, last year 100,000, but since August 1st total 4,215,000 vs. 3,773,000 for corresponding period last season.

After this time last year exports to Europe amounted to about 2,500,000 bales, or a total for the season of about 6,300,000. By reason of Europe having consumed about 1,750,000 bales more than was consumed last season, made possible by foreign spinners making inroads on their reserve stocks, Europe is in need of more cotton this season than she imported last season. But the South is not in a position to furnish Europe with so much cotton this season because of last year's small crop and the big consumption in the United States, at most about 6,000,000 bales unless the country is to be drained of every available bale.

American mills need about 7,000,000 bales this season, leaving about 6,250,000 bales for export and for stocks in the interior and at the ports to protect the contract markets. It is evident, therefore, that the trade is facing a possible famine in the staple by next summer.

In comparison with last year 611,000 bales were consumed by American mills last month vs. 621,000, being larger than last year day for day, as there were only 28 days in February this year vs. 29 last year.

From August 1st to February 28th, the mills of the

United States consumed 4,389,000 bales against 4.143,000 for the corresponding period last season, and the large number of active spindles reported at the close of February this year, 33,117,000 against 31,980,000 last year, denoted the continuance of a heavy consumption by domestic mills.

In order to conserve its cotton supply, which is decreasing rapidly, England has prohibited the exportation of Egyptian cotton from the United Kingdom. Imports of Egyptian cotton thus far this season in the United States are about 100,000 less than to even date last season, consequently American mills are using more of American cotton than would be the case if foreign cotton could be obtained in larger volume.

Of the world's visible supply of American cotton of 3,576,000 bales vs. 3,950,000 last year and 5,977,000 two years ago, there is in the United States 2,211,000, last year 2,388,000 and 2,474,000 in 1915, and Europe's portion, including afloat, is 1,365,000 against 1,562,000 last year and 3,503,000 year before last, of which Liverpool is credited with 745,000 vs. 893,000 in 1916, and 1,407,000 in 1915. To make the statistical position of the staple stronger, the South has less cotton to market than was brought into sight after this date last season by nearly 700,000 bales.

In view of the probability of stocks of cotton being all but exhausted by the end of this season, much interest is centered in the outlook for the new crop. Thus far climatic conditions have been unfavorable; too dry and cold in the Southwest; too wet east of the Mississippi river. As a result preparations are very backward in the eastern half of the belt, while Texas and Oklahoma, especially central and south Texas, need a general, heavy rain. Compared with the normal for five months ending with February the total average rainfall for Texas measures only 6.38 inches against 11.16. As yet the acreage remains uncertain.

COTTON MANUFACTURING.

Setting the Revolving Flat Card.

BY GEORGE S. BROWN.

It is a very rare occurrence to find two carders who have identical ideas as to setting cards. Being aware of this, I am not going to take the responsibility of giving a list of settings to use on cards for different classes of work. There are many things about cards that theoretically appear excellent but when put to a practical test, do not work out advantageously. In a way, card settings come under this heading. Nevertheless, if a carder wishes to obtain a list of settings for a working basis, let him write to the Superintendent of Documents, Government Printing Office, Washington, D. C., and ask for U. S. Dept. of Agriculture, Bulletin No. 62. Enclose five cents with the request and the nickel will be well spent. This bulletin gives a list of organizations, speeds and settings for yarns from 12's to 36's. While he may not really need this paper, and even though he does not agree with it in many instances, still he will be pleased to have it in his possession.

I am not going to give my card settings in this article, but I will discourse a bit about card setting.

The first thing for a new or inexperienced man to grasp concerning card setting is that the cylinder is the starting point. The cylinder bearings are immovable, so all settings on a card are governed directly or indirectly by the cylinder. For an example, take the feed plate. This is set to the licker of course, but the licker is set to the cylinder, and the licker must be set to the cylinder before the feed plate is set to the licker. If we set the feed plate to the licker first, then after we set the licker to the cylinder, our first setting would be thrown out. The feed plate would be too far from the licker, or the licker would be striking the feed plate. Bear this in mind when making settings. Begin at the cylinder and work out.

When about to set a card, be sure that it is clean. Have all fibre and dirt removed from it. Setting is usually done right after grinding when the card is clean and in excellent shape, but sometimes, for various reasons, settings must be made at other times. Clothing full of strippings and dirt is not in proper condition for accurate settings.

Before starting the actual setting, see that a set of gages of the correct thickness—each leaf numbered—and in *perfect* shape is at hand. If a man has been in the habit of throwing his gages into a tool chest and slamming hammers and wrenches in on top of them, now is the time for him to mend his ways. Also, get a new set of gages. Bent, dented or crimped gages should be condemned and destroyed. Another thing, if a card grinder produces a home-made gage, either take it away from him or make him take it out of the carding department.

When making a setting, always be sure to sufficiently loosen the nuts that hold the bearing or stand so the set screw or set nuts can move the part to be set. For instance. If setting the doffer to the cylinder, loosen up the doffer bearings so they can slide on the card frame. Don't try to force the setting by turning the adjusting nuts without loosening the stands. Enough leverage on the adjusting screw to bring the doffer into correct relation with the cylinder might be secured by this means, but the strain on the doffer bearings is great, and sooner or later they will slip in or out and the setting will be wrong. The wire may get badly faced, too, if doffer moves in toward cylinder.

When setting two parts to each other, set the movable part *"away from"* the stationary one. That is, set closer than desired at first and then draw off to the correct gage. This is especially desirable where there is an amount of backlash in the adjusting screws.

Some carders cannot understand, if they set a part, say a doffer to a cylinder, when they have set one end at No. 7 and then fetch the other end up to No. 7, why the first end is then found too close. Figures 1 and 2 are grossly exaggerated sketches but they explain the cause of this action in setting. In Fig. 1, the doffer is set to No. 7 at end C, near bearing A. When making this setting, the doffer shaft, A-B1, is really the radius of a circle having its center at B1. Next, setting up end D, by moving bearing

B1 in Fig. 1, the doffer shaft is still the radius of a circle, but now the center is at A. When the point B-1 is brought forward from B-1 to B-2, Fig. 2, every point on the radius A-B, except the very center, which is at A, is also brought forward. If the end, C of the doffer was the center, the first setting of No. 7 at C would not be changed, but the end, C is really on the radius, A-B, with the center at A far enough off to cause the No. 7 setting at C to materially close up when bearing, B is brought up. Briefly stated, we cannot advance one end of a doffer or a like part, without advancing the other end, because the centers on which the doffer swings are outside the doffer ends.

Whenever making a setting, try the next thinner gage between the parts to make sure of clearance. If set with

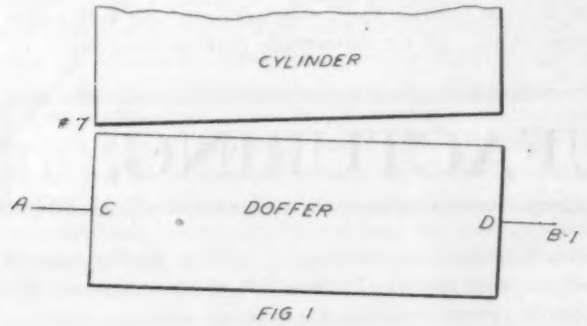


FIG 1

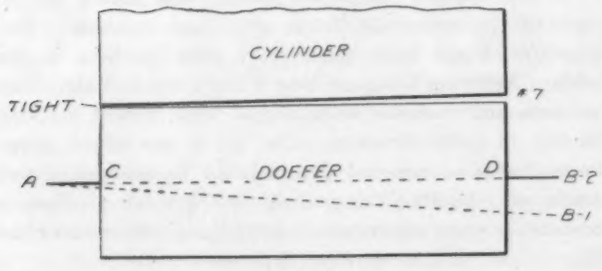


FIG 2

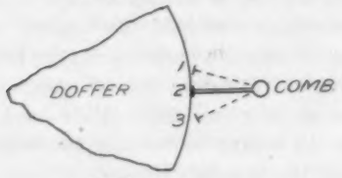


FIG 3

No. 10, then try No. 7, and see that it is perfectly loose. If the part being set is a revolving part, turn it around and make sure that it clears at all points.

There are many methods of setting flats. The most certain and satisfactory way is to set to five flats, one at each setting point. To do this quickly and easily, chalk the ends of ten tops, one on each side of the setting tops. Put on the chain crank and revolve the tops until the marked ones come on top where they can be removed. Be careful and don't chalk a top held in the chain by a bolt whose head carries an "X" or other special mark, or the flatchain will separate when this roll is removed.

After removing the ten tops, remove the chain until the tops are again in setting position. A good system to use is to set the tops at the back of the card to "loose" gage, and set closer as we work towards the front where the last top should be set "tight" gage. Some tops are set by means of an index. With cards that are set this way, take out the ten tops just the same and use a gage to set by. This makes sure of the setting. Depending on an index is uncertain. Don't do it!

After having tightened up the stands, try the settings again to make sure they have not changed. Revolve the cylinder by hand to ascertain if the tops and cylinder clothing clear. Keep the flat chain reasonably tight, and put a little black lead on the ends of flats or tops (call them whichever you choose) where they slide on the bend.

Screen settings are rarely changed but the screens should be perfectly smooth and their spaces free from fly. If cards are not rolled out frequently enough and fly gets packed underneath until it fills the space between the screens and the floor, no more dirt or fly can fall out. Watch out beneath the cards and don't let the space get filled.

The stripping comb should be set so as to just clear the flat wire. Be sure the comb is parallel to the flats. Don't have one end higher than the other.

Set the doffer comb just to strip clean, and have its throw as low as possible but not so low that web will droop too much. This setting will allow the comb to knock out considerable dirt that would otherwise pass into the sliver. Try this experiment: Set one comb high and one comb low. Clean off the pan beneath the web and note the results.

In damp, muggy weather, combs will have to be raised a trifle to overcome drooping web, while in clear, cold, dry weather, with electricity present, combs must be lowered or they fail to strip at all. As the comb blade moves in an arc, be sure to set it to the doffer at the point where it approaches nearest to the doffer in its stroke. Otherwise, when started up, it will chop into the wire. Fig. 3 shows the stroke of the comb. Set at point marked 2. On most cards this means when the comb is level or horizontal.

Mote knives, regardless of the distance set from the licker, should be parallel to the licker. Don't get one end high and the other end low, or the gage will be tight in the middle and loose at both ends .

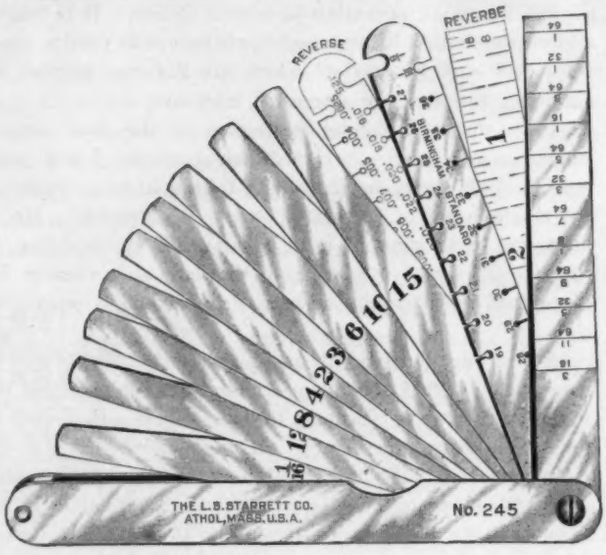
If a white strip is noticed on the cylinder or doffer clothing (generally it appears on both) where the fibres are sticking, look for faced wire caused by the cylinder and doffer coming in contact with each other. Cylinder and flats, or cylinder and licker rubbing will produce the same effect on cylinder wire. Neps will be present in the web at the point where the two parts are in contact.

If a lumpy web is being produced, the setting between the cylinder and the doffer has been thrown out. The doffer is too far from the cylinder. Ragged edges to the web are frequently caused by a lump of waste lodging at the end of the doffer close to the cylinder. If a card throws out side waste, and there is no apparent cause, try leveling up the entire card.

If the laps break between the lap roll and feed roll, first see if all gears are in mesh, then if this is not the cause, the lap roll is likely too smooth. Give it a coat of paint in which a goodly amount of sand has been mixed.

Insist that the tail ends of laps be torn off and not allowed to pass under the feed roll. Lumps in the sliver and "bung-ups" on the licker are often caused by letting

Special Cotton Mill Gauge Free



for a few minutes of your time.

The taper gauge shows the thickness in 64ths to 1/16ths of an inch on one side, and on the reverse side is graduated as a rule three inches of its length, reading in 8ths and 16ths of an inch.

The wire gauge, English Standard, shows on one side sizes numbered from 19 to 36, with two extra slots, one 1/16, the other ⅛ on an inch, and on the other side shows the decimal equivalents expressed in thousandths. This gage has also 9 thickness or feeler gage leaves, approximately 4 inches long, of the following thicknesses: .002, .003, .004, .006, 008, 010, .012, .015 and 1/16th of an inch all folded within the case, which is 4¾ inches long, convenient to handle or to carry in the pocket.

Our Service Department desires the opinions of active mill men on the quality of the work shown in the advertising pages of this issue of COTTON.

We are, therefore, going to give this gauge for the best letter by a mill executive who gives the clearest and most definite reasons why, and in what maner, any certain advertisement is, in his opinion, the best.

Contestants must be mill executives, from overseers to presidents, connected with spinning, weaving, knitting, or finishing plants. The letter must be accompanied by the name, address and official position of the writer in order to be eligible, and must reach this office not later than the first of the month succeeding the date of issue.

The judges will be the Editor of COTTON and the Manager of the Service Department, whose decision will be final. The name of winning contestant will be announced in COTTON'S pages.

Address Contest Department of COTTON, Atlanta, Georgia.

the tail ends of laps run through. Make good piecings when putting on a fresh lap.

Finally, although the wire is in good shape, the settings correct, every bearing well oiled but not excessively so, good laps being fed, a proper draft producing a good weight of sliver, still, if the cards and their immediate surroundings are not kept clean, the results from the carding room will be far from satisfactory. Time and again have we all heard the old saying: "Cleanliness is next to godliness." It certainly can well be applied to the carding room. Dirty carding rooms mean dirty help; and the combination means dirty work.

The Training of Textile Employees.

BY ARTHUR H. GULLIVER.

The most vital question before any textile plant today is the proper training of its workers. The success of such an organization depends on the enforced discipline of each and every hand in its employ. It is not sufficient to have skilled executives and competent overseers only but the orderly movement of the hands and the stock must not be hindered by any delay either in time of the workman or the operation of the machines.

When employees are hired they fall naturally into two classes: those who claim to have had experience and those who do not. The skill of the new hand of the former class can only be learned by his or her everyday work in the department where they have had their previous training. Alas they too often are found to belong to the unskilled and form the harder class of learners to instruct, teaching them to break off old wasteful habits and establishing in them untried and skillful ones.

Training the second class, those who have had no previous knowledge either of the fibres or of the machinery and whose lives up to the time of entering the plant have been passed in other occupations and who have never performed that kind of manual labor, must be based on the characteristics of each individual. It is to be adapted to his or her limitations—it must be direct, personal and continuous.

Personal—because we humans are directly valuable if the peculiarities of each are studied separately, even the words of instruction descriptive of the work to be done and the way to do it being adapted to the one instructed. The first requirement is the willingness of the teacher to put himself in the position of the taught, to find out how, with the latter's brain and having his use of hands and body, what he should want to be told and what he should want to be shown. The hand is quicker than the eye and the showing of how the work should be undertaken and what muscular motions used, must not be more rapid than the eye and the brain of the taught can follow.

The overseer must know and the manager must understand that the worker comprehends what is to be done and how. What motions are to be made, in what order and what must be the result. The time that is needed and what is to be done if the work to be accomplished should not be done properly. How mistakes and inefficiency can be rem-

edied without destroying the work of the hands or of the machines. How the operation can be repeated, and with the least delay the trouble corrected, making the production of the machine be continuously maintained.

Let us take for an example the work of the card grinder. There is a correct way to grind the clothing, a way that the general experience of the builder as well as the operator of the revolving flat type of cards have found to insure the work that the machines turn out. The setting of the emery wheel on the wire, the time that it should run to make the sharp pointed wire not faced, and the gauges that should be invariably tried to insure the best work of licker-in, flats and doffer. This method will be the only one that will give the result sought, a well-carded, even sliver with the fibres straightened to insure strong even yarn and satisfactorily woven cloth.

A new man is hired who has been in a good mill under a competent overseer; how often does his foreman assume that the grinder knows these details thoroughly and does not have the new grinder perform the work under his own eye? No, they assume as he is from a good mill he must know the correct method and they only find out when he has hopelessly damaged the clothing, that although the way he was taught might have been all right, that the way he did the work was all wrong.

This instruction must be direct for the workman shown, so that each one being trained will know that the teacher is not giving general orders but helping the one he has in hand to master for himself the way the work is to be done and giving him the benefit of the teacher's knowledge and experience. Thus saving all possible delay in the employee acquiring the full details of the operations to be performed by the muscles and the knowledge to be mastered by the brain.

We have all seen how little the posted orders are understood by the workmen of various nationalities employed in the plants of today. Even the words used in the notice convey no proper knowledge of the facts stated. The only way to learn a language is to think in French or Italian and put the thoughts directly into the words of the foreign language. How can we expect an everyday hand of a foreign birth with only a rudimentary power of thought, and even less knowledge of the English words spoken, to secure any understanding of what the order means and what he is expected to do?

Most important of all it must be continuous, even if we infer that the hand has been able to do without help the work on which he is employed. Give the instruction at every opportunity, stay with the employee until he has done it more than once, come again in an hour or less, and show him again and have him do it while being observed. Be sure that the thing to be done and the way to do it have become instinctive. That automatically he performs the work and that the hand and the eye are working together. That the noise of the machinery or any unaccustomed happening will not confuse and destroy the whole of the instruction already given.

Here I again wish to emphasize the need of making the socalled "old hand" receive the right instruction. If the overseer does not follow up these workers with this system he will find that at the time that he wants to know they will be ready, they will take up the old way and the work suffer in consequence.

Again, the instructor should be the same person until the employee has mastered his duties thoroughly. Change in the manner of conveying the ideas should be avoided until this lesson of operation is second nature. It is worth all the trouble that it takes and it will insure as results, good work and high production, which are the aim, as well as making a satisfied and interested workman.

In a word, automatic perfection is the goal toward which we must strive. How much does the skilled steel worker think about the danger of falling when he rides on the single beam of metal far above the ground? He is interested as to where it is to be placed in the building, if the riveter is ready to secure it in place and whether the place that it will span has been properly made ready for it.

So, in our model textile plant the worker should not be concerned whether the overseer might find him doing the wrong way and performing the wrong operation, but he must be concerned in turning out work and doing it in the right time that will insure nothing to be done over again. This will guarantee that he is securing the amount for his labor that the management wishes him to earn, and increase his interest in securing commendation rather than in escaping blame.

Rockford, Ill.

The Chamber of Commerce of the very wide-awake manufacturing city of Rockford, Ill., have fully justified their titles as live wires in the commercial world by issuing an illustrated booklet entitled "Rockford" and containing 114 pages of beautiful protogravures, many of them in colors, illustrating the story of Rockford. The presentation of this story in pictorial form is a unique idea; it tells a story of progress and achievement which will be of value to all who are interested in progressive city building.

Necessarily the story is presented in an abbreviated form, inasmuch as the illustrations occupy the larger part of the space. However, the story of Rockford needs no embellishments, as the real facts of its wonderful development and growth place it among the foremost ranks of American cities in these characteristics. We take this occasion to publicly thank that typical representative of successful Rockford, R. E. McCausland, Field Manager for the Barber-Colman Co., of that city for remembering us with this beautiful volume.

As regards methods of introducing cotton goods, Paraguay, is a market for export commission houses and manufacturers' agents rather than for the manufacturers. In the first place, an importer there can buy from an export commission house his whole line of cotton goods. There is then but one order to make out, one payment to arrange for, and one shipment to attend to. When buying from the manufacturer who specializes in a single article, the importer is obliged to place a great number of small orders and attend to a great number of shipments. Further, the expense is increased to a considerable extent. Importers there also have an idea that in ordering a large supply of goods through an export commission house they will receive better terms than in ordering small lots from manufacturers.

Designs for Fancy Cotton Fabrics.

BY T. WOODHOUSE AND J. IRELAND.

PART THIRTY-FIVE.

The plain or fancy fabrics in various shades are exceedingly attractive and dainty, but the valuable features due to color are obviously lost in ordinary half-tone reproductions. All the technique, however, can be displayed in the working particulars, and, after all, this phase of the subject is, for most purposes, the important one so far as the actual weaving and designing are concerned. Beautiful as these colored fabrics undoubtedly are, there is still something unique and attractive in the all-white textures—something which suggests purity and cleanliness and which is scarcely possible to approach except by the process of bleaching. And, in general, the plainer the fabrics are, the more pure and attractive do they appear, but such types can clearly be of little value so far as design goes. There are, however, numerous examples of figured all-white cloths, the structure of which is interesting, and we purpose illustrating a few at this stage.

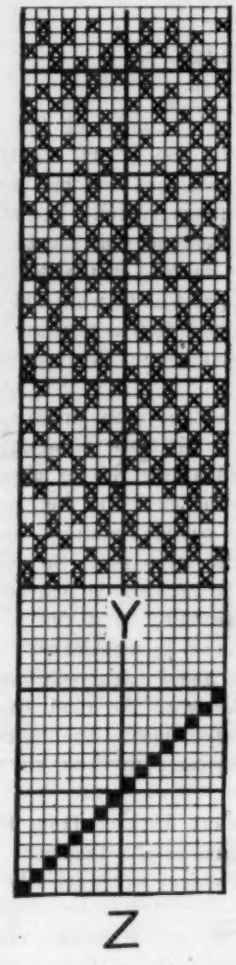


FIG. 156.

Consider first the cloth illustrated in Fig. 155, the weave for which is of a crepe nature. This cloth contains, in the finished state, 102 threads per inch of warp, and 76 picks per inch of filling. The design is illustrated at Y, Fig. 156, and the draft, straight on 16 harnesses, is shown at Z in the same figure. As a rule, these crepe designs are difficult to make, and also difficult to follow on design paper. In the design Y, Fig. 156, it will be seen that one complete unit requires 44 picks, and, since no two threads are alike, it follows that the weaving plan will be identical with the design.

The difficulty of discerning the unit design from many of these crepe cloths is due to the fact that the characteristic features of their construction is the absence of any definite regularity, or rather apparent regularity, in the interlacing of the threads and picks. This feature is introduced solely with the object of importing a small figure on the fabric, the limiting boundaries of which are very difficult to define. In this respect the cloth under consideration is an excellent example, and since the maximum float in both the warp and the filling is three, it follows that the weave is suitable for coarse yarns in low setts as well as for fine yarns in high setts.

A well known and satisfactory way of arranging spot patterns is by one or other of the sateen orders of weaving. Many of the regular sateen weaves, and a few of the irregular ones, are utilized to form the order of distribution and the base of the spot figures. An example of a spot design arranged in the 5-thread sateen order is illustrated in Fig. 157. There are 104 threads per inch and 80 picks per inch of white yarns in the finished cloth. The spot itself is in the form of a small diamond, and is developed on the face of the cloth by the filling yarn. A very small area

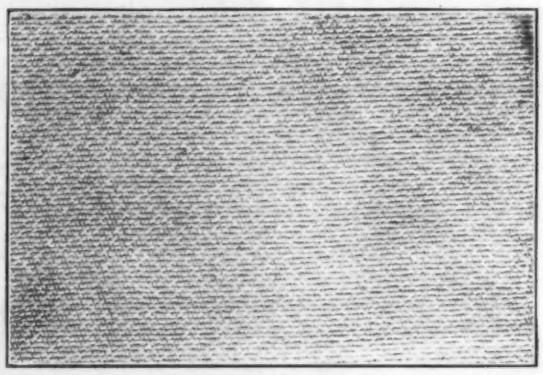
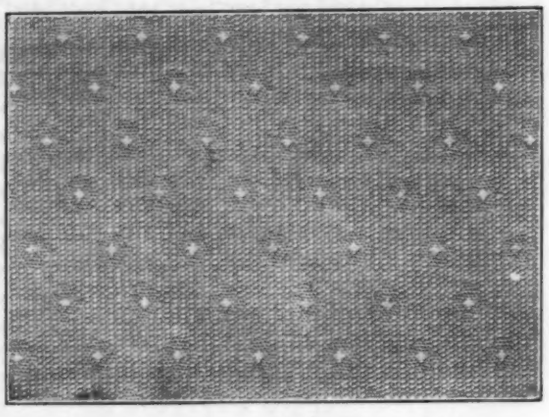


FIG. 155.

beyond each spot is developed by the plain weave, while the remainder of the design is a vertical stripe or filling rib effect. One complete unit of the design on 40 threads and 100 picks is shown in Fig. 158. With these numbers it is clear that the intervals between the centers of the spots are:

100 picks ÷ 5 picks in the weave = 20 picks; and 40 threads ÷ 5 threads in the weave = 8 threads.

In making the design, the centres of these spots could be found by counting the horizontal and vertical rows of small squares on the design paper, or, if desired, the area of the design 40 by 100 could be divided into 25 rectangles, the



F.G. 157.

area of each rectangle to represent the small square in the corresponding position of the 5-thread sateen weave or base. In other words, each small square on the unit base (the 5-thread sateen) would be represented on the design paper by an area of 8 threads and 20 picks, or 160 small squares.

The spots must be placed similarly in each of the five areas which are chosen to hold the five spots. Any rectangle may be chosen for the starting point, but the simplest way is, perhaps, to take them in the order 1, 4, 2, 5, 3 as the

spots in the unit base are often shown. This method has been adopted in Fig. 158, and the central spot of the first figure appears on the 1st thread and the first pick—the left hand bottom square. This selection naturally determines the position of the four remaining spots. When the five spots have been arranged as indicated, it only remains to fill in the selected ground weave to complete the design. In the present case the ground weave is very simple yet effective. The weave is really a combination of a weft rib and plain, i.e., three threads weaving together one up one down, and the next single thread weaving one down one up, in other words, alternate sets of triple and single threads weaving plain.

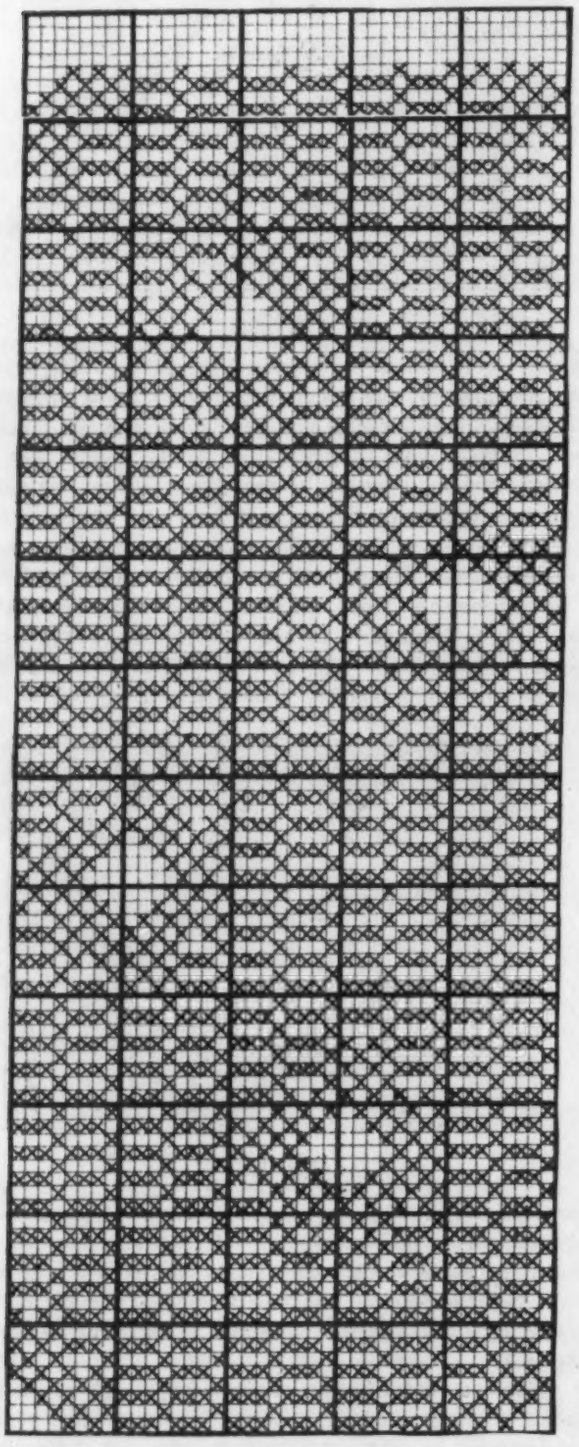


Fig. 158.

Although a large number of the threads are weaving in the same order for a considerable distance, there are very few in each repeat that could be operated by the same harness. Hence, the most satisfactory method would be to use the straight draft over 40 harnesses if the cloth is to be woven in a dobby loom, when the weaving plan would again be identical with the design. It is, however, highly probable that such a design would be woven in a jacquard loom.

(To be continued.)

A Southern Born Industry.

The Southern Spindle and Flyer Company of Charlotte, N. C., was organized in 1901 by W. H. Monty. At first Mr. Monty employed only one man and his first building was only 30 x 50 feet. It was considered a hazardous undertaking, and many people believed that the kind of work he was beginning could not be done in the South. Mr. Monty, however, was fully equipped for the work which he was undertaking, for he had served fourteen years in the Lowell Machine Shops and other large textile shops of the North.

Grit and determination combined with a thorough knowledge of the trade won out and today this concern employs seventy highly skilled workmen, has a pay roll of about $900 per week, is housed in a building 30 x 100 feet, not including office, steel shed and other outside buildings, and is one of Charlotte's most creditable industries. So successful has been the business that the company is just now planning to erect a large brick structure 50 x 100 feet with a 40 x 50 feet ell wherein to house its machinery.

There are in the shops proper about twenty-six men while the company has eighteen crews on the road, each crew being made up of from two to four men. The majority of these men have been with the company from six to twelve years.

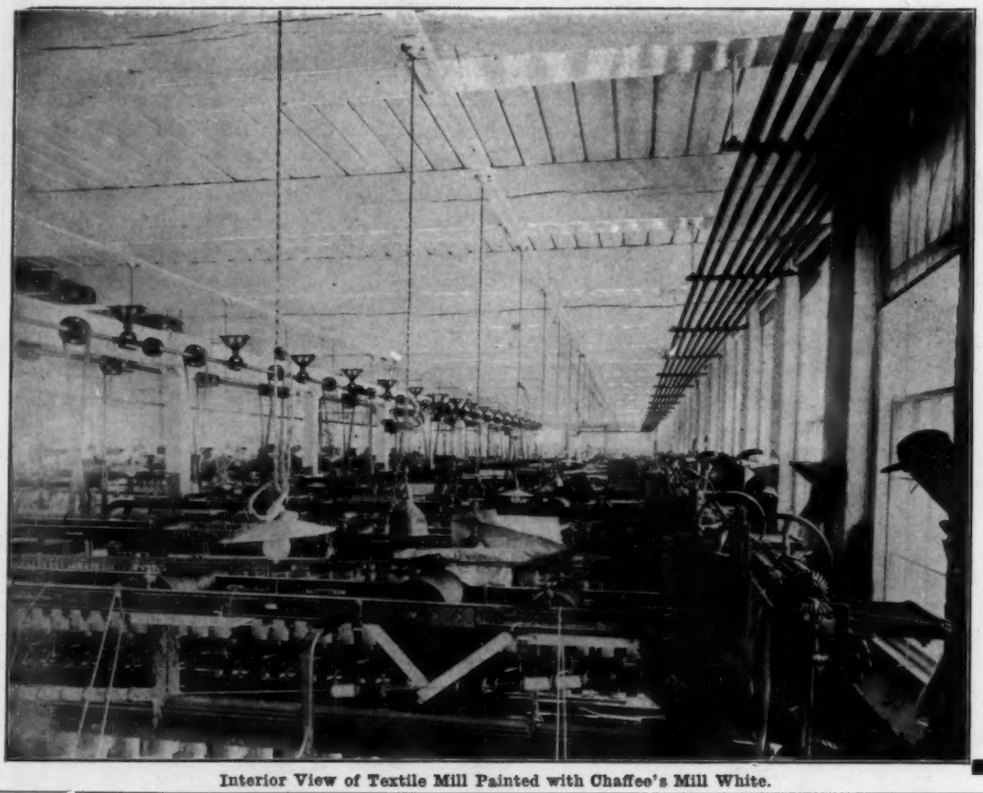
The plant is located only a short distance from the center of Charlotte on the main line of the Piedmont & Northern Railway over which a convenient street car schedule is maintained.

Mr. Monty and his associate, W. H. Hutchins, vice-president and secretary, have brought about them a fine type of workmen. Part of the men were brought from England and several from the North, but the majority are native people, trained in the plant for the skilled work they are now doing.

The most modern equipment has been installed for expediting the work. There is an electrical welding machine which welds together steel bars, spindles, rocker shafts, etc., as well as other labor saving machines.

The Southern Spindle and Flyer Company was organized for the purpose of meeting the demands of the Southern cotton mills by establishing in the South an organization competent to meet their needs and they have been and are accomplishing this purpose to a surprising degree. W. H. Monty, the organizer of this company, has been in active touch with the Southern mills for the past sixteen years and has made a specialty of this line for the past thirty

Paint Your Factory Walls and Ceilings with



Chaffee's Sparkling Mill White

Added Light
Lowest Ultimate Cost
Permanent Finish

Endorsed by Users Everywhere

Prolongs the Daylight Hours—Reduces Bills for Artificial Light—Creates Sanitary Surroundings—Insures Increased Precision and Accuracy in the Workmanship of Employees.

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Thomas K. Chaffee Company

Providence, Rhode Island

Interior View of Textile Mill Painted with Chaffee's Mill White.

years, which has given him a peculiar fitness for the work which they are doing.

This company not only has the distinction of being the first concern organized in the South for the repair of steel rolls, spindles and flyers of all kinds, picker lap pins, cylinder heads, etc., but it has the unique distinction of having manufactured the first spindles, steel rolls, flyer pressers and lifting rods ever manufactured in the South and is said to be the only Southern concern manufacturing them today.

This Company's field of operation is not confined alone to the manufacture and repair of the above named commodities, but in addition they make a specialty of aligning and leveling shafting, re-arranging, overhauling and erecting spinning and card room machinery. In short, this company is a specialist, or doctor for the ills and troubles of cotton mill machinery.

That the company has attracted wide notice may be seen from the fact that the company gets inquiries from Japan, Portugal and other foreign countries while in America they have men operating in the mills from Texas to Virginia. Also the North and the East have come to look upon it as expert in its particular line as is evidenced by the orders they receive from New York, Boston, Philadelphia, etc., and the work which they do among the silk mills of New Jersey and elsewhere.

The fact that a man very seldom resigns from an association, once he has learned the benefits to be derived from it, is an argument in favor of co-operation that the non-believers in associations will do well to ponder over.

About 18 years ago some importing firms in New York took advantage of the skillful Japanese labor and set the girls in Japan to making cotton-braid goods (Renaissance work or Battenbergs), drawn work, scarfs, table covers, and cheap laces and embroidery. This industry has now grown to considerable proportions, and thousands of girls are making these goods in their homes in the country districts during their spare time, of which there is a great deal during the winter months, especially in the coast regions.

Japanese cotton and linen embroidery and lace stitches are heavy thread, and it is the opinion of experts that Japanese work will never reach the French and Irish stage of excellence. Japanese labor is especially adapted to drawn work and Renaissance goods, lace curtains, table cloths, and similar rougher lacework.

Most of the materials used in the manufacture of drawn work and Renaissance table covers, which form the bulk of this industry, are imported. So are the materials for laces and lace curtains. Previous to the war materials were purchased from England and some from France, but on account of the increased cost and great inconvenience and delay experienced in obtaining them from those countries importers here have had temporary recourse to American mills, notwithstanding their high prices. This high cost of materials has started their local manufacture, but as yet the homemade product is very inferior. The materials used in the manufacture of these goods represent from 40 to 50 per cent of the cost of the finished article, so that from $1,250,000 to $1,500,000 worth of materials are required in the industry.

Dyeing, Bleaching and Finishing.

Methods of Detecting Dyes on Fabrics.

By M. Fort, M. Sc.

The identification of coloring matters on dyed fibres has advanced considerably during recent years, and has now become more simple and reliable as the result of various systematic schemes of analysis, by which identification may be carried so far at any rate as to admit of matching with a similar dye applied by a similar method. The exact identification of a dye as to name and brand is usually still a difficult matter, unless the analyst possesses a wide knowledge of both color chemistry and dyeing, as well as considerable experience in detection of dyes. There is no way to success in this work other than through practice, which, however, in itself it is not sufficient to solve many of the problems which turn up. Considerable experience in this work and in teaching it to others convinces one that isolated tests, spot tests, etc., and even the use of good tables, are not sufficient. A good deal of initiative and great patience are wanted besides the required knowledge. The best tables are imperfect when used by persons other than those by whom they were compiled, and need adapting by the analyst, who must "calibrate" them for his own use.

All the modern schemes are based on one described in a pamphlet by Otto Witt, which forecasts nearly all the later developments. The following volumes should be available for every dyer and textile chemist who is obliged to analyse large numbers of dyed samples: Schultz, "Farbstoff-Tabellen"; Mulliken, "Identification of Pure Organic Compounds," vol. iii., "Dyestuffs"; Green, "Identification of Dyes on the Wool and Cotton Fibres" (a new edition was recently issued under a modified title); Heermann, "Textil u. Color. Chem. Untersuchungen"; Knecht, Rawson, and Loewenthal's "Manual of Dyeing"; papers by Holden, Walker, and others, and the pattern cards of new dyes, with their reactions, in the "Journal of the Society of Dyers and Colorists." Failing the possession of Schultz's tables, the English translation by Green of an older edition will be required. Formanek's book of data relating to spectroscopic analysis of dyes is of little use for analysis of dyed fabrics. The pocket-book of British Dyes Limited contains a small amount of useful information on the identification of dyes on the fibre. Some of these books give data relating mainly to dyes in solution, which can only be applied for detecting dyes on the fibre with certain reservations. Thus, dyes which are fixed on the fibre by means of a mordant are usually more stable towards chemical reagents than the same dyes in solution.

The choice of a rational method of procedure is helped by adopting either Green's or Mulliken's system. They are similar in many ways: the former's scheme has the merit of simplicity, but the latter gives more detailed and exact information, this being assisted by the inclusion of a color scheme to which all colors are referred. This system is more difficult to master, but it is well worth the trouble required. The other books mentioned are useful for reference, especially Schultz, while information on the reactions of natural dyes is most readily obtained from the "Manual of Dyeing."

Strict adherence to tables does not meet all the difficulties—e.g., a greenish-blue shade may be classified on either the green or the blue table, and it is easy to overlook this possibility during actual work. Final confirmation must always be secured by applying the largest possible number of special reactions. A little experience will show the difficulty in deciding what is a "strip," a "stain," "bleeding," "return of color," etc. It is because of their inability to obtain the results stated in tables that many dyers give up in disgust and return to spot tests, etc., which are still more fallible, but often have the appearance of being simple and reliable. This is a mistake, and failure to draw the right conclusions in using tables can often be avoided by a careful comparison of stripping tests, etc., with a blank test using water alone. Experience shows that the value of such a comparison cannot be over-estimated, especially for beginners, in helping to obtain the correct results.

1. If a fabric is dyed in different colors—e.g., yarn-dyed or printed,—it must first be dissected. A clipping or strand is then burnt carefully in a bunsen flame, and the tip of incombustible ash (if any) examined as to color. Iron mordants leave a reddish-brown ash; chrome, greenish-grey; tin or alum, white. Smaller amounts of mordants, such as are used in after-treating cotton, may escape detection by this method, but on fusing a bit of the fabric with soda ash and nitrate or chlorate of potash, chrome even in traces gives a yellow melt, while traces of copper are revealed by a flame test. This is done on a platinum wire, holding in the flame, while the vapor of boiling hydrochloric acid is present at the same time. An intense blue flame shows the presence of copper. Hot oxalic-acid solution decomposes most copper lakes, and also removes tin weighting from silk, while hydrochloric acid also is sometimes useful for stripping metallic mordants and weighting from fabrics to be analyzed. Chrome is the usual mordant, but if this is not found, the mass from fusing, as described above, may be acidified with acetic acid and tested for metals by ordinary chemical methods; or, before acidification, a drop of alizarin paste or logwood extract may be added, and, after boiling, cooling, and acidifying with acetic acid, the color of the lake formed allows of the mordant being recognized. Another method is to bleach or strip the dyed pattern, and then dye with a known polygenetic dye, such as alizarin, when the mordant can be recognized by the color of the shade. Titanium may be detected even in traces by testing the solution obtained after fusion, etc., with hydrogen or sodium peroxide. A yellow or orange color denotes the presence of titanium. (Conversely the use of titanous chloride provides a delicate test for hydrogen peroxide.) Nine times out of ten a simple burning test carefully done will reveal the nature of a metallic mordant at the start.

(Continued on page 352.)

A "Barrett Specification Avenue"

The real name of this street is Park Avenue.

It is located in the heart of New York City and lined on both sides with huge modern apartments, such as are shown in the above illustration.

We call it "Barrett Specification Avenue" because practically every permanent building in sight has a Barrett Specification Roof.

And this is not an unusual thing. For instance, we could send our photographer throughout the country taking pictures at random and the result would be the same.

For most of the permanent buildings in every city and town carry this type of roof.

And the popularity of Barrett Specification Roofs is not to be wondered at when you consider the following features:

First: Lowest unit cost per year of service.

Second: Freedom from maintenance expense.

Third: Approved as "Class A" construction and take the base rate of fire insurance.

Fourth: And most important, we now guarantee these roofs for 20 years under the following conditions.

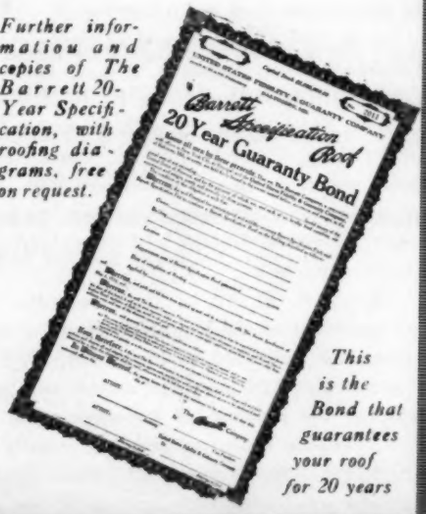
How to Secure the 20-Year Guaranty Bond

We are now prepared to give a 20-Year Surety Bond on every Barrett Specification Roof of fifty squares and over in all towns in the United States and Canada of 25,000 population and more, *and in smaller places where our Inspection Service is available.*

This Surety Bond will be issued by the United States Fidelity and Guaranty Company of Baltimore and will be furnished by us without charge.

Our only requirements are that the roofing contractor shall be approved by us and that The Barrett Specification, dated March 1, 1916, shall be strictly followed.

Further information and copies of The Barrett 20-Year Specification, with roofing diagrams, free on request.



This is the Bond that guarantees your roof for 20 years

The Barrett Company

Largest Manufacturers in the World of Roofing and Roofing Materials

New York Chicago Philadelphia Boston St. Louis Cleveland
Cincinnati Pittsburgh Detroit Birmingham Kansas City Minneapolis
Salt Lake City Nashville Seattle Peoria
THE PATERSON MFG. CO., Limited: Montreal Toronto Winnipeg
Vancouver St. John, N. B. Halifax, N. S. Sydney, N. S.

Notes About Men You Know.

John W. H. Buckley, formerly overseer of weaving at the Goodyear Cotton Mills, Inc., Killingly, Conn., has been appointed superintendent of the textile department of the Ten Broeck Tire Company, Louisville, Ky. This company, which has been buying all of its tire fabrics, has decided to install the necessary machinery to produce all the fabric it requires which will be under the superintendence of Mr. Buckley.

Samuel A. Fortson has resigned as secretary-treasurer of the Graniteville (S. C.) Manufacturing Co., to take a position as general manager at the Enterprise Mfg. Co., at Augusta. He was succeeded by Coles Phinizy. Mr. Fortson has acted as secretary and treasurer of the plant since it went into the hands of a receiver about a year and a half ago.

Some of the Men You Know.

Left to right. G. W. Maddox, Overseer of Weaving, Swift Mfg. Co., Columbus, Ga., L. H. Beck, Gen. Supt. of the Georgia Cotton Mills, Griffin, Ga., Charles A. Sweet, Jr., Superintendent, Swift Mfg .Co., Columbus, and E. Chappell, Southern Representative H. & B. American Machine Co.

Wm. Miller has resigned as overseer of spinning and winding at the Hanes Mills, Winston-Salem, N. C., to become superintendent of the Ernaldson Mfg. Co., St. Pauls, N. C.

Fred Johnston, formerly sales manager of the Shaw Stocking Co., Lowell, Mass., is now general manager of the company, but continues in charge of selling in addition to his new duties.

W. D. Ingle has resigned as overseer of weaving at the Woodstock Mills, Anniston, Ala., to become superintendent of the Halifax Cotton Mills, South Boston, Va.

J. C. Self, president and treasurer of the Greenwood Cotton Mills, Greenwood, S. C., was a recent visitor to Atlanta, where he closed a contract with J. Leon Hoffman the well known landscape architect, to take charge of the plans for beautifying the mill village and park at the Greenwood Cotton Mills.

Philip S. Tuley, of the Louisville Cotton Mills Co., and president of the Kentucky Manufacturers' & Spinners' Association, has been in Frankfort, Ky., for several days, in connection with a special session of the state legislature, held for the purpose of remodeling the present state tax laws. Textile manufacturers are greatly interested in the provisions of the proposed bill, which would tax such manufacturers at the rate of forty cents per each $100 on machinery and raw materials, or materials in course of manufacture, and relieve them of other taxation, such as county and city. It is planned to relieve the manufacturers as much as possible in order to develop the state and bring in new industries.

C. H. Carr has resigned as superintendent of the Danielson (Conn.) Cotton Mills to become superintendent of the Pomona Mills, Greensboro, N. C.

Henry Richardson, superintendent of the Readville (Mass.) Cotton Mills, has been transferred to the Hebron Manufacturing Co., Dodgeville, Mass. These two mills are operated by the B. B. & R. Knight Company.

Aug. W. Smith, president of the Brandon, Poinsett and Woodruff Mills, and Wardlaw Smith, his assistant, have taken offices in the Greenville News Building, at Greenville, S. C.

B. W. Bingham has resigned from the position as superintendent of the Prendergast (Tenn.) Cotton Mills and accepted a similar position with the Ozark Cotton Mills at Ozark, Ala.

F. G. Parker, superintendent of the Albion and Mt. Holly Mills, Mt. Holly, N. C., has resigned to accept a similar position with the Prendergast (Tenn.) Cotton Mills.

Here Are Some Others.

Left to Right. L. L. Arnold, Editor of **Cotton**; P. E. Glenn, Treasurer of the Expositon Cotton Mills, Atlanta, and Secretary and Treasurer of the Cotton Manufacturers' Association of Georgia; W. J. Vereen, Treasurer of the Moultrie (Ga.) Cotton Mills and President of the Georgia Cotton Manufacturers Association. (Photo by Winn, Atlanta.)

Henry W. Nichols, head of the department of instruction of the New Bedford (Mass.) Textile School, has been appointed principal of the Bradford Durfee Textile School, of Fall River, Mass.

Arthur B. Barnes has been appointed assistant superintendent of the Parker Mill, No. 1, Fall River, Mass., succeeding the late Thomas Madden.

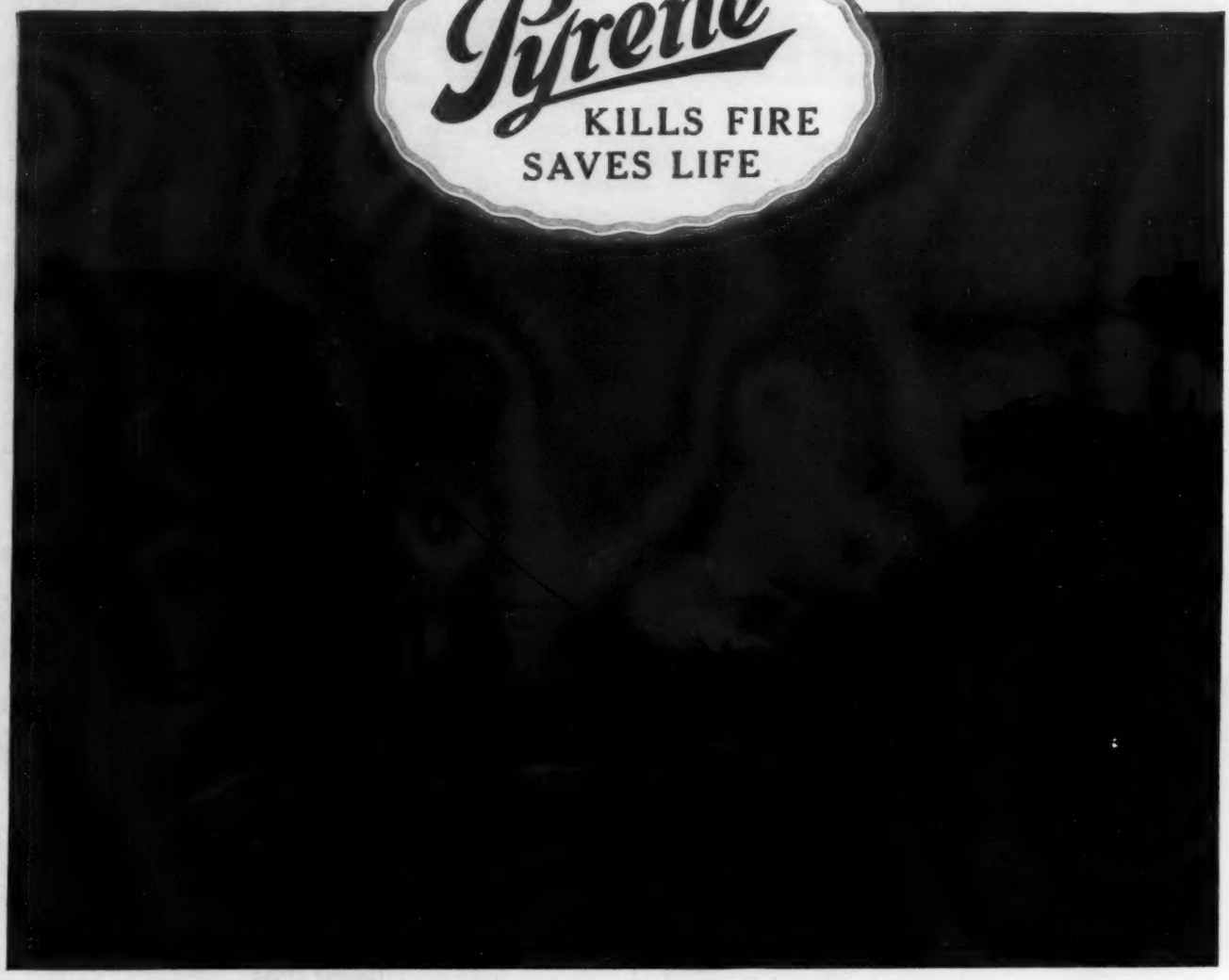
C. H. Whitnacht has accepted the position of superintendent of the Vardry Mill, Greenville, S. C.

W. L. Lashley, of Spray, S. C., has accepted the position of assistant superintendent of the Deep River Mills, Randleman, N. C.

Henry W. Atkinson has accepted a position as assistant superintendent of the Muscogee Mills, Columbus, Ga.

Pyrene

KILLS FIRE
SAVES LIFE



ANOTHER PREVENTABLE CATASTROPHE!

Another warehouse wiped out. Just one of hundreds of calamities that occur every day. The newspapers are full of them.

Cotton mills, cotton gins, cotton warehouses, cotton shipping platforms and docks are in particular danger from fire.

Pyrene is master of the cotton fire! It kills the flame but does not harm the fibre.

It never needs recharging until used. No upkeep cost. A woman or boy can use it.

It never pays to take chances with fire. No manufacturer should delay getting full and complete Pyrene equipment. Tomorrow may be too late.

Advise your factory manager or purchasing agent to act now.

Pyrene Manufacturing Company, New York

Every Appliance for Fire Protection.

G. V. Frye has resigned as overseer of carding at the Pacolet Mills, Trough, S. C., to accept a similar position at the Henrietta Mills No. 2, Caroleen, N. C.

J. G. King, superintendent of the Elmira Cotton Mill Co., at Burlington, N. C., was a welcome visitor in Atlanta and Columbus, Ga., during the past month.

T. C. Smith is the superintendent of the new Griffin Hosiery Mill at Griffin, Ga.

R. L. West, of Hannah Pickett Mills, Rockingham, N. C., has accepted the position of overseer of cloth room at Anniston Mfg. Co., Anniston, Ala.

R. L. Hindman has resigned as overseer of spinning at the Baldwin Mills, Chester, S. C., to become night overseer of spinning at the Granby Mills, Columbia, S. C.

R. C. Colins has resigned as superintendent of the Vardry Mills, Greenville, S. C., to become overseer of spinning at the Lydia Mills, Clinton, S. C.

The Atlanta Residence of Richard P. (Dick) Tinkham, Southern Representative of the Economy Fuse Company, of Chicago.

C. E. Turner has resigned position as overseer of weaving at Fulton Bag Mills, Atlanta, Ga., and accepted similar position at Echota Mills, Calhoun, Ga.

Wm. N. Arrowwood, formerly of Griffin and Monroe, Ga., has accepted a position as overseer of weaving at Pelham, Ga., Mfg. Co.

J. M. Davis, of Hillsboro, N. C., has accepted position as overseer of slashing at the Camperdown Mills, Greenville, S. C.

C. A. Pender has resigned as carder at Monroe (Ga.) Mfg. Company to become carder and spinner at Durham Mfg. Co., E. Durham, N. C.

Edward M. Henley, formerly superintendent at the Erwin Mill No. 2, at Duke, N. C., has been promoted to assistant manager of this mill.

G. L. Little, formerly of Concord, N. C., has become overseer of carding at the Aspin Mill at Fayetteville, N. C.

J. F. Pennington, formerly of Ozark, Ala., has accepted a position as superintendent of the Aspin Mill at Fayetteville, N. C.

D. F. Poole, formerly overseer of weaving at the Poe Mills, Greenville, S. C., has accepted a position as overseer of weaving at the Hillside Mills, LaGrange, Ga.

J. W. Brown has resigned as overseer of carding and spinning at Capital City Mills, Columbia, S. C., to become overseer of spinning at the Ashcraft Mills, Florence, Ala.

Eugene Herring has resigned as overseer of weaving at the Hillside Cotton Mills, LaGrange, Ga.

T. C. Branson, formerly of the Hamilton Carhartt Mills of Rock Hill, S. C., has accepted position as overseer weaving, Springstein Mills, Chester, S. C.

Frank A. Bean has removed from Lisbon, Maine, and accepted a position as overseer of carding with the Standard Spinning Co., of Oswego, N. Y.

T. H. Curtis, after three years with the Shetucket Co., in Connecticutt, has resigned and has accepted a position with the Lyman Mills at Holyoke, Mass.

Edward A. Kimball, formerly with the Iowa Manufacturers' Association at Des Moines, Iowa, has been appointed secretary of the Georgia Manufacturers' Association, with headquarters at Atlanta.

W. A. Kennedy, representing the Electro Bleaching Gas Company, of 18 E. 41st St., New York City, was a recent visitor in Atlanta and vicinity.

Rufus R. Wilson, who was elected Secretary of the National Association of Cotton Manufacturers by the Board of Government at its meeting on February 20th, comes to the association after many years of active work as a student and writer on industrial, economic and political matters, and as an organizer and executive in association and political work. His more recent services have been as Secretary of the Commercial Club at Seattle, Washington, and as one of the managers of Senator Weeks' pre-convention campaign for the presidential nomination.

Ceasar Cone.

Announcement of the death of Ceasar Cone was made in the personal columns of Cotton last month. This announcement came to us just as the forms were closing on the March number. He was 57 years old, and was one of the better known and more successful manufacturers of the South. A very adequate account of the life of Mr. Cone was compiled by G. S. Bradshaw, of Greensboro, for the biographical history of North Carolina, which is to be published by C. L. Van Noppen of Greensboro. This sketch, through the courtesy of the author and publisher, was furnished the Greensboro Daily News, from which we make the following extracts:

It was the unclouded foresight and restless energy of Moses H. Cone which in the dark days of the early nineties, brought to life the Cone Export and Commission company, and through its co-operative agencies saved from bankruptcy many of the older cotton mills of the state. In the projection, organization and successful operation of this company, Ceasar Cone, with clear head and steady hand, stood by the side of his brother at every step in this perilous venture.

In 1890 the old and successful firm of H. Cone and Sons, wholesale grocery merchants of Baltimore, was dis-

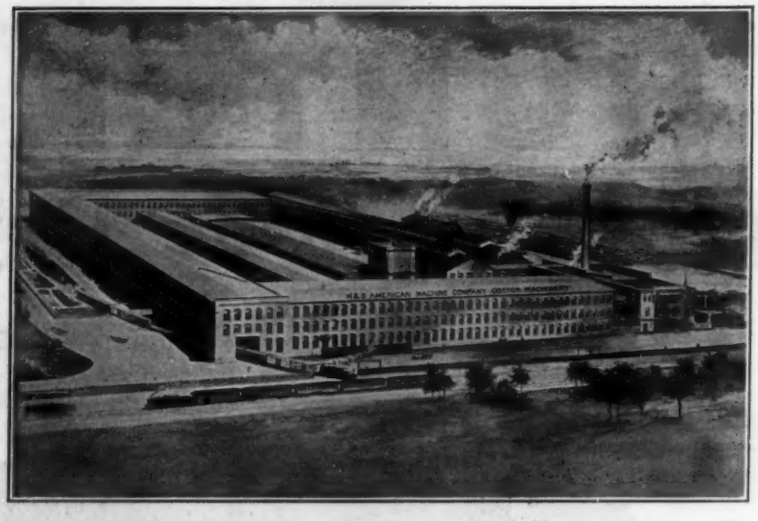
C. E. RILEY, Pres.
Boston Office
65 Franklin Street

Southern Offices
814-815 Empire Bldg.
Atlanta, Ga.

COTTON MACHINERY

Opening and Picking Machinery

Card Room Machinery



Spinning Room Machinery

Twisters for Wet or Dry Work

With Band or Tape Drive

H. & B. AMERICAN MACHINE COMPANY

PAWTUCKET, R. I.

solved. The two brothers had been members of this notable firm, and through its wide connections and ramifications had obtained an accurate knowledge of the conditions and resources of the south.

The Cone Export and Commission company was their first venture in the handling of cotton goods. This put them in close touch with Southern cotton mills, and led them into unexplored territory. The keen, alert and astute mind of Ceasar Cone was not slow in seizing the rich opportunity before him in the field of cotton manufacturing.

In conjunction with his brother, Moses H. Cone, who was associated with him in all of his enterprises and extensive investments, he acquired by purchase several hundred acres of land adjoining the corporate limits of the city, on which was erected in 1895 and 1896 the large cotton mills of the Proximity Manufacturing company, of which he was the acting and active president. The dominant idea in the organization of this company was to manufacture a class of goods not made in the south prior to 1896. Starting with 240 looms, in less than 10 years this company enlarged its capital stock and built another mammoth plant, known as the White Oak mill, the largest denim manufacturing plant in the world.

While Mr. Cone was largely interested in other business and financial institutions, his life's real work was here. His master mind, indomitable will and restless energy were concentrated in the successful operation of these mammoth plants. Under his directing genius the twin towns, or villages, surrounding these plants became models of cleanliness and beauty. He established a system of offering prizes, or rewards, to those who excel in the neatness and adornment of their homes. Nor was he content to stop here. He took another advanced step in providing, at the expense of his company, the very best school facilities, including kindergarten work, music, cooking and sewing, in high-class, modern and comfortable school buildings for all the children of his operatives. He engaged trained nurses to look after the sick and established a model dairy to provide pure milk. His broad-minded policy went beyond the mere exchange of money for labor and sought the promotion of his own interest in the comfort, contentment and happiness of his employes.

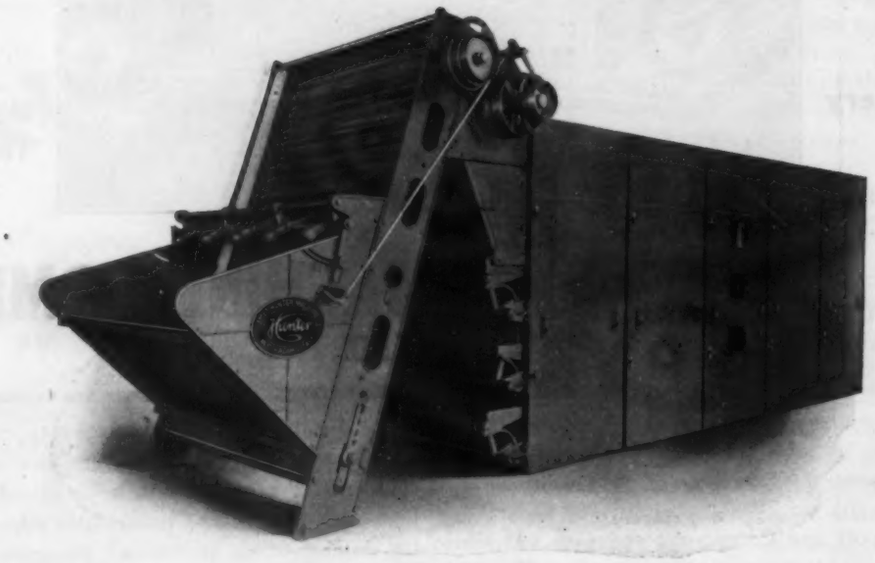
Ceasar Cone courted neither notoriety nor public honors. He preferred the music of the spindle and the loom of his mills to that of the brass band. There was more beauty for him in the report of a week's output of his big mills then there was in a commission to Congress. He was in love with his work of building for himself, his community and his state. Success in this work was the lone goal of his ambition. He inherited the sturdy traits and sterling qualities of a successful father, Herman Cone, who came from Bavaria, Germany, to this country in 1845.

At 14 years of age in the stationery business as general utility boy in a Baltimore firm, he started. He never departed from the sane methods and sound precepts inculcated under the parental guidance of his tender years. The paternal lesson was rigid honesty, rigid economy and rigid observance of every obligation. The life of Ceasar Cone was a living exemplification of these principles.

He has builded well. Respected by his associates, revered by his employees, and loved by his personal friends, he leaves behind him a tremendous industry—a fitting monument to his successful life.

JAMES HUNTER MACHINE CO. Hunter NORTH ADAMS MASS.

HUNTER
Agitating Table Dryer



THIS is a superior quality dryer that occupies less floor space, uses less power and less steam than any other dryer made.

Its construction is of steel, with asbestos insulation. It is absolutely fire-proof. No drums, no wire aprons. No revolving parts to wind up stock and start fires. It is a perfectly smooth perforated sheet steel drying table.

Constant agitation of stock gives uniform treatment to each particle. Especially adapted for drying dyed and bleached cotton, wool, hair, rags, etc.

Bulletin 82 is worth reading. A post card request will bring it.

Write today.

James Hunter Machine Company

North Adams, Mass.

How Other Men Manage

Practical Discussions by Cotton's Readers on all varieties of Mill Subjects

Executive Authority.

Editor Cotton:

The first principle in any business must be to define each employee's authority. In every line this must be carried out. From employer to the sweeper boy, each one must have his work cut out. The employer should never issue an order to an employee under some foreman. The order should go to the superintendent, who gives it to the foreman, who gives it to the employee for whom it is intended.

Authority is exemplified in the railroad better than it is in any other industry. While the president of the company in many cases has made all the rules, he would never think of ordering a special train direct from the roundhouse. The order must go down through its regular channels. If the roundhouse were to put a train on the track for him it could not move, for unless the order went down through the operating department by its regular channels, the despatcher would not know of it and the engineer would never get the signal to go ahead. If the order were submitted through the regular channels the operator would know of it and that train would get its regular place on the line, otherwise it would not get the signal to come off the roundhouse switch onto the track to go to the president's office.

The same rules of orders going from the head through subordinates is observed in all military organizations. If the commander-in-chief wants a private soldier he tells a brigade commander, who tells the colonel, who tells a captain who tells the private. If the commanding general took the private direct, that man would be reported as absent from his company without leave. Therefore orders must be transmitted down through the regular channels.

In business this same principle should be worked out. If the firm has a general manager all orders should go through him to the department heads, who in turn give them to individual workmen. If the employer wants any new plan put into operation he should tell his manager and not go direct to a department head. If he violates this rule he is spoiling the discipline of his factory. The department heads will think that the general manager's orders need not be accepted as final, as the boss will give the orders direct when he wants them carried out.

There must never be any divided authority. Some factories have two men, with the same amount of authority, one to look after quality and the other for quantity. This is very bad. One of the two should have authority over the other or otherwise occasions will arise when their authority will conflict. The quality man may issue an order which retards the quantity. If the quantity man then issues an order to speed up the quantity the department heads do not know which order to follow unless the one is over the other. If so they can say the manager (whichever is higher) wants so and so. If both have the same authority, the foremen are in a bad position, as each one feels that his orders must be obeyed and often both orders cannot be carried out.

One thing that should be discouraged is for one department head to complain to another department head. They should tell the superintendent. He can usually settle such matters without telling that another department is complaining. This complaining to the one higher up instead of to each other, tends towards harmony which is very essential if efficiency is desired in the factory.

Too many factories make the mistake of giving a man a title without the authority. When a man is called superintendent he should be the one who superintends all operations. If a man is called manager he should manage the entire plant. In other words a factory must work out an organization like a military body where the highest title has the most authority.

A Manager (S. C.)

Hints on Mixing Cotton.

Editor Cotton:

We very seldom see in articles on cotton carding hints or advice to be used in the mixing and opening room. We all know that when mixing cotton it is desirable to have as large a batch or lot as possible. This is to get the work uniform, as the cotton varies a little in staple and in this way the cotton is thoroughly mixed.

I think too much stress cannot be laid upon the beginner to spend a good part of his time in the opener room, not so much to deal with the machinery, as to deal with the cotton.

The beginner should know how to staple cotton and if he doesn't then he should stay with the cotton and practice until he does.

I always make it a point to staple every bale again, just before it is put into a mixing. In this way many bales which have been passed before are found to be short and are stopped in time. Every mill man knows what damage is done by having short stock mixed with the long.

The writer vividly remembers when he was just starting on his first carder's position. A bale of short stock got by unknown. All at once the break of the yarn came down to almost nothing and the sizing went all to pieces. It was just as the spinner remarked, "The bottom seemed to have dropped out." The writer then had his troubles for three or four weeks. He went carefully over the room to find the trouble. He was convinced by the results that the stock was mixed but could not find where. He sifted the matter down so thoroughly that finally he knew it must have been a bale of short stock in the mixing. To tide the trouble he had to shorten his drafts but when the short stock was through the work was too heavy and required changing back.

You can well believe that I watched every bale after that. And it is to help the beginner to avoid these mistakes which possibly may mean much to him that I have written this article. Some overseers have a well balanced room and really seem to have an easy time of it but don't think for a moment any overseer can take it easy. He must be wide awake and watching everything all the time. So watch the cotton, for if the work starts wrong it can't finish right. Watch the different lots of cotton and know them so that if one lot is inclined to be short you can doubly watch each bale of that lot. Carder (Mass.)

Answers Electrical Questions.

Editor Cotton:

In reply to the inquiry by "An Overseer" in February issue in regard to the cost of electric power and the reading of a meter, would say that one kilowatt is equivalent to 1.34 horsepower, or practically one and one-third horsepower. Therefore if 150 kilowatts per hour were being used the number of horsepower would be one and one-third times 150, which is 200.

At 2 cents per kilowatt hour, the cost will be 150 × 2 = 300 cents, or $3.00 per hour. For 200 horsepower the cost will be 300 cents divided by 200 which is 1.5 cents per horsepower hour.

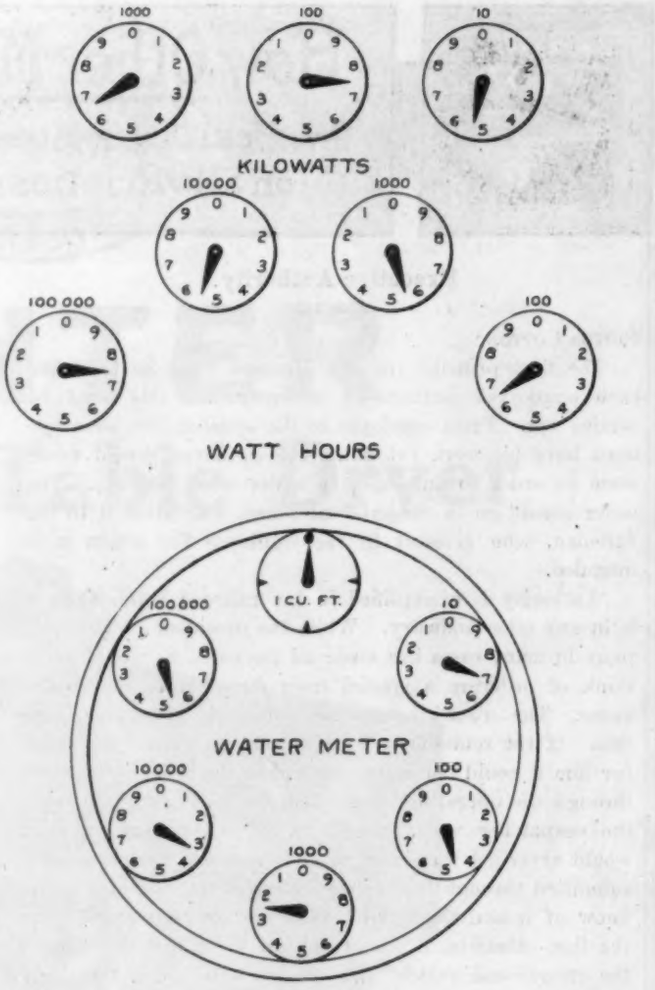
To read a meter, any meter whether for water, gas, kilowatts, or watts, reference is had to the accompanying meter dials. The first set of three dials is similar to that of a house meter, either electric or gas. The figure 10 at the top of the right-hand dial indicates that when the pointer makes one revolution, 10 kilowatts will have been used; when the middle pointer completes one revolution 100 kilowatts will have been used, and when the left-hand pointer completes one revolution 1000 kilowatts will have been consumed.

The figures on the right-hand dial are read, 1, 2, 3, 4, etc., those on the middle dial are read, 10, 20, 30, 40, etc., and on the left-hand dial, 100, 200, 300, 400, etc. When learning to read a meter, put down on paper the last figure which the right-hand pointer has passed over. To the left of this figure, put down the last figure passed over by the middle pointer; then to the left of this figure put down the last figure which the left-hand pointer has passed over, the three figures will represent the reading of the meter.

In the first set of dials, the figure to be taken from the right-hand dial is 5, from the middle dial it is 7, and from the left-hand dial, 6, hence the reading is 675 kilowatt hours.

The numbers to be taken from the watt hour dials are, 6 from the 100 dial; 5 from the 1,000 dial; 5 from the 10,000 dial, and 7 from the 100,000 dial. Putting these down in the order given, beginning at the right, we have 7556. Now the figures on the right-hand dial are read 10, 20, 30, etc., therefore the figure 6 represents 60, and a cipher must be added to the first row of figures, making it 75,560 watt hours.

The water meter dials are read in the same manner, the reading being 53,247 cubic feet. The first set of dials are similar to those used in gas meters, so that the first reading, if taken from a gas meter, would indicate 675 cubic feet of gas. Will Beale (Miss.)



Break Draft.

Editor Cotton:

Break draft is the preparatory draft given the "bulky" form of the fibres while undergoing the action of the drafting rolls of any one machine, before these fibres have come under the action of the delivery roll and its preceding roll.

It is generally conceded that the draft proper is between the delivery roll and its preceding roll, and this being true makes it necessary for the "bulky" form of fibres to meet with some attenuation before undergoing the action of these latter rolls. We say necessary because this prepares the fibres for the strenuous action that takes place, and causes less friction in the attenuation as the fibres become more parallel with each other.

The amount of "break draft" required varies. The size of the "bulk," going-in at the beginning must be considered. The stock used, and whether or not twist has been inserted. Also it might be well to consider the number of pairs of drafting rolls in use on the machine in operation and the speed of these.

The writer is of the opinion that "break draft" does not receive the consideration and attention that the majority of mill men should give it, and I am very sure that the majority of mills do not have the proper "break draft" on any of their drafting machines.

The different machine builders have begun to appreciate its value as it will be noticed that in their later models

ADMIRALTY
NEW RIVER SMOKELESS COAL

SUPERIORITY
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Will neither dent nor break when subjected to hard usage. Stronger than wood, lighter than steel.

Write for Bulletin 12.

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Textile Mills and Water Power Developments

GREENVILLE, S. C.

there is more break draft at the drawing frames, and a gradual decrease at the finishing processes. More especially do we notice that some builders equip their spinning frames with draft gearing at each end of the drafting rolls, making it possible for the overseer to obtain whatever "break draft" necessary or desired.

The amount of "break draft" generally ranges from 1 to 1.25 as conditions call for or permits, and as stated, the writer is of the opinion that if more "break draft" was used on each drafting machine throughout the mill, a more even and stronger product would be the result.

The writer has in mind one mill that has no "break draft" at all on the spinning frames and to prevent the roving from running out at the ends of the leather rolls, the saddles have been turned around so that no weight is put on the back rolls. Experience and common sense teach that the product is more uneven and weaker in strength than it would be if a good "break draft" was obtained.

Yosemite (Miss.)

Short Cuts on Speeders.

Editor Cotton:

In making changes in a card room most of the calculations center around the speeders. Here we have the calculations for draft, twist, lay and tension. The last three, twist, lay and tension, remain constant for a given hank regardless of the back roving, excepting possibly the twist change. That may vary on a hank depending whether the back roving is combed or carded, long or short staple, and may be changed one or two teeth either way from the standard after taking these things into consideration. The rule:—The square root of the hank being made, times the gear on and the product divided by the square root of the hank required, I find is very good for twist, lay and tension. Everywhere one goes the machines are running on some stock and I have found it easier to size the roving on the frame and figure from that, than to count all the gears in the various trains for constants.

Figuring the draft is different and for my own use I like to think of the simple example of $2 \times 3 = 6$. We find the draft by dividing the product of the number of teeth in the driving gears and the diameter in inches of the front roll, by the product of the number of teeth in the driven gears and the diameter of the back roll. If we call the draft gear a one tooth gear we get the draft constant, and by dividing this constant by any draft gear we get the draft that we would have by putting that gear on. If $6 \div 3 = 2$ then $3 \times 2 = 6$; also, $2 \times 3 = 6$. I apply that as my rule, using 6 as a draft constant, 3 as the draft gear and 2 as the draft so that if 6, the constant, is divided by 3, the draft gear, the quotient is 2, the draft. This, turned around, gives 3, the gear, $\times$ 2, the draft, $=$ 6, the constant (approximately). So that in changing from one hank to another, when the back roving is being changed, I first find the draft by dividing the hank being made by the hank being used at the back ($\times$ 2 if using double roving at back.) Then using 2 as the draft and 3 as the draft gear we have $2 \times 3 = 6$ or the draft $\times$ the draft gear on $=$ the draft constant (or very nearly so). Then by finding the draft required by using the rule for draft, with the substitution of the new back roving and the new hank required, we get the draft for the hank. Then $6 \div 3 = 2$, we have the constant $\div$ by the draft gear.

Fairly accurate results can be obtained by this method and as every frame is sized after starting on a new hank (or should be), a change of 1 tooth either way is easily made.

Carder (Mass.)

The city of Sabadell, in northeastern Spain, is the center of an intensive manufacturing district, specializing in cotton and wool textiles with dependent industries, such as wool washing, dyeing, and printing. The need of more textile machinery has also developed the local manufacture of mechanical looms, spinning machines, electric motors, dynamos, and material for electric installation.

The official report of the Sabadell Chamber of Commerce for the year 1915 states that in this neighborhood the wool industry employs over 130,000 spindles and 1,723 looms, while the cotton mills located there have 51,344 spindles and 2,074 mechanical looms. In connection with these mills there are 171 dyeing plants, 12 bleacheries, 22 steam presses, 95 carding machines, all with modern accessories. A total force of 10,600 horsepower is used, of which 6,500 is electric force, 1,500 steam, 600 hydraulic, and 2,000 gas. About 12,350 laborers find employment in the various mills and factories of Sabadell, 4,300 being men, 6,750 women, and 1,300 children.

The average wages paid per week of six days in the wool industries are $4.05; in the cotton industries, $3.60; and in the machine shops, $4.05, making a total annual outlay for the employment of labor of $2,799,900. Owing to the general rise in prices for food and fuel, employers voluntarily granted a temporary increase in wages —for those receiving up to $2.70 per week a weekly increase of $0.18; those receiving from $2.70 to $4.05, $0.27; and those receiving $4.05 and more, $0.405.

Consolidation Announcement.

The Chattanooga Iron Works and the Eureka Supply Company, both of Chattanooga, Tenn., were recently consolidated, and will continue the business under the name of the Chattanooga Iron Works. This company manufacturers iron and wire fences, window guards, office railings, iron stair-ways, all kinds of builders' iron work, patterns, foundry and machine job work and other similar material. The accompanying illustration shows a wire factory sign manufactured by this company, who are in the market to furnish anything desired in the line of wire or metal work. They will be glad to make suggestions to accomplish any results the inquirer may desire.

Winning Letter in the February Contest

EDITOR COTTON:

I assume that every man who wishes to succeed in his chosen vocation is constantly on the lookout for improvements or new ideas in his line just as much as every man desiring success, and having these improvements or new ideas in practical shape is desirous of placing them upon the market in the most telling fashion. Hence advertising, especially in those papers or magazines peculiarly adapted to bring the goods before the interested parties. The trade magazine is read by the trade. Wide-awake men—the ones that "count" read their trade journals and they read the advertisements. They are glad to come across something new—something better and keep abreast of the times.

The advertisements in COTTON are clever, instructive and profitable, and there is much difficulty in my mind in choosing the best. I might say though, that I am particularly struck with the one on Page 15, regarding the Toledo Scales. The claims put forward are very striking. The words "essential to good picker results" are taken from a customer after a trial. The cut of the picker room illustrates the ease, accuracy and economy at a glance, and clinches the "necessity" feature. The copy of a testimonial after trial seems conclusive proof of exceptional merit. "Instantaneous," "absolutely correct weight," "less cost," etc. These words are the proof—and the different varieties of machines to suit different needs, makes the advertisement both interesting and compelling of further investigation, which the advertiser desires. The names of the firms with these scales installed compel a deduction as to their genuine merit. All this, backed up by the article on page 206, clinches conclusively the claims of as comprehensive, reasonable, practical and economical a necessity for cotton mills as I have ever seen.

Seth Taylor.
Overseer of warping, spooling and dressing, Riverside Cotton Mills, Danville, Va.

Danville, Va., March 6th, 1917.

EDITOR COTTON:

I have received your letter, also the gauge, and must admit my surprise, yet gratification, at being adjudicated the winner in February's contest. The gauge is a splendid article and much appreciated. Wishing you and your valuable paper prosperity, I remain,

Thankfully yours,
Seth Taylor.

The textile industries of the Province of Pisa, Italy, are of considerable importance, about 60 establishments giving employment to nearly 12,000 people. There are 45 cotton-weaving mills, with 3,400 domestic hand looms, and 1 silk mill. During the last few years the activities of the cotton institute have been principally directed to the re-establishment of the spinning industry and to regulating the sale of the manufactures. Through its efforts this industry has slowly improved, but on account of the decreased demands from abroad early in 1914 it faced a serious crisis, this, however, was somewhat relieved later in the year by increased domestic demands.

Safety First Suggestions.

EDITOR COTTON:

One of two things that mill men often overlook is the proper care of the main belt. This is a belt to which too much care is never given. We should examine it every day, yet many overseers never stop to examine it even once a week. An examination requires only a few minutes, and might save many a dollar in the long run.

Another thing, the writer has seen the room in which this belt is kept, full of boxes and burlap, and in some cases, boards.

Before so abusing a belt room, we should stop and think, what would be the result if a fire should break out in that belt room full of boxes, burlap and boards. We know that the belt rooms are fireproof, but that is no reason we should fill them with fuel. Thus we see that the main belt receives none too much care, no matter how careful we may be. But we may prevent what might prove a large blaze by being wise and careful in keeping the belt room clean.

Do not depend upon the engineer to notify you that the main belt of your room is in poor condition, see to it that you are the first to notice any defects. Have your section-hand go to the belt room and examine the main belt every Saturday noon, and see to it that he does not fail.

Next, what is the condition of the fire pails in your room. Is every pail filled with water to the top and can they always be found in this condition? Are the small hose in convenient places and are the rubber blankets at hand? How many can place the little word (yes) after each of these questions?

Let us consider the fire equipment. There are mills in the writer's home town that have a trained force of fire-fighters who work at different trades, but are given their weekly drills. (Good for these mills, they believe in "Safety First"). Others depend upon the city fire department, but many a time they arrive too late.

The writer furnishes each fire pail with a brush and by dipping the brush into the pail and throwing the water in that manner on the fire (as on a frame), the saving in water damage is considerable. Tab. (Mass.)

According to press reports, a group of Scandinavian capitalists has applied to the Argentine Government for a concession of Government lands situated in the Territory of Formosa on the Pilcomayo River. The object of the concession is the manufacture from native fibers of sisal twine, cordage, bagging, sacks, and similar products. Experts who have investigated the region for the syndicate report that excellent fibers, and particularly the "caraguata" are abundant. After exhausting the existing wild textile plants, the syndicate proposes to cultivate agave and similar fibers on an extensive scale. Experiments have been conducted during the past two years in a small establishment situated in Paraguay. Samples of the products obtained from native fibers have been presented by the applicants for the concession, who expect to install machinery with a capacity for handling 120,000 leaves per day.

Probably few men would take the trouble to look for work if they didn't need the money.

Card equipped with S K F Ball Bearings on Main Cylinder.

S K F Ball Bearing Comb Box attached to Card.

Eight Reasons for Using S K F Ball Bearings on Cards

1. Uniform quality of Production.
2. Ease of Starting.
3. Ease of Cleaning.
4. Economy in Power.
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The economy of production soon turns the original higher cost of ball bearings into a dividend paying investment.

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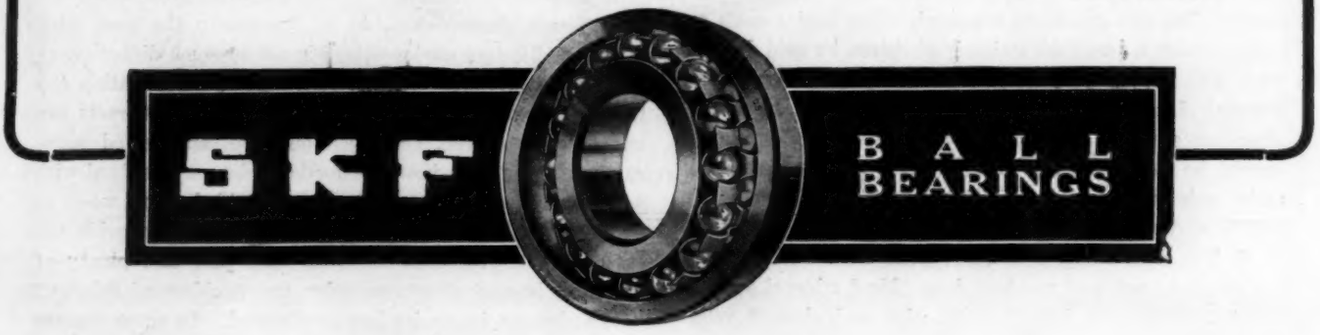

Methods of Detecting Dyes on Fabrics.

(Continued from page 338.)

The presence of a mordant generally indicates the presence of a mordant dye also, but there are exceptions. Thus, iron may be due to Prussian blue, chrome to chrome yellow, etc.; or, in the case of shoddy, the mordanting may be due to stripping with chrome or titanous chloride previous to dyeing with acid dyes.

2. Next, before commencing the use of stripping reagents, a small sample of material should be boiled with water for two minutes and the amount of bleeding noted. This may be repeated in the presence of smaller bits of white wool and mercerized cotton to note the staining effect. In quite recent editions of Green's tables this blank test has been introduced, but its real significance is not stated even yet.

3. The performance of such a blank test insures that when testing for basic dyes afterwards by boiling with acetic acid (1 per cent solution), there is much less chance of mistake. If a dyed pattern bleeds more into acetic acid than into water alone, the dye must have basic properties, and can be distinguished from many direct cotton dyes or acid dyes, which bleed less into dilute acetic acid than into water alone. Some acid dyes, such as acid magenta, can be dyed on tannin-mordanted cotton, and are liable to bleed off cotton like ordinary basic dyes. In certain compound shades, certain basic dyes in small amounts will resist stripping with acetic acid—e.g., indoine blue in commercial indigo navies. Dilute hydrochloric acid may be used occasionally for stripping in such cases.

4. The next stripping test is one for acid dyes, and is made similarly by boiling for two minutes with dilute ammonia (1 per cent solution). Any excess of bleeding in this reagent over what occurs in water alone reveals the possession of acid properties by the dye on the fibre. Certain acid milling colors cannot be recognized with certainty without the use of the water test for comparison. A few acid tests—e.g., soluble blue—are liable to be decolorized by ammonia, in which case bleeding is not evident unless the stripping liquor be afterwards acidified to restore the color.

5. The distinction between acid dyes proper and direct cotton dyes is made by putting in along with the ammonia a small piece of mercerized cotton to see if the dye which bleeds off stains the cotton. The amount of staining is very variable, and as some acid dyes also stain cotton more or less, it may be difficult to decide if a direct cotton dye is present. A very slight stain from light shades—e.g., yellow, red, etc.—is sufficient evidence; but with deep shades —e.g., a black or deep blue—pronounced stains should be obtained, as many acid blacks will also stain cotton considerably. The test should be repeated, using boiling-soap solution, which renders the staining of cotton by acid dyes almost nil. Green recommends repeating with ammonium acetate. In any case direct cotton dyes which have been after-treated with formaldehyde, or in some cases developed, cannot be detected by a staining test, and one can only make sure of these by eliminating all other classes in the course of the analysis.

6. The dyes which resist stripping with acid or alkali are sulphide, vat, and mordant dyes. Most mineral dyes are stripped with acid, but Prussian blue and chrome yellow are stripped (decomposed) with alkali, as is also titanium tannate.

7. Sulphide dyes on cotton are tested for by boiling gently with stannous chloride (tin crystals) and dilute hydrochloric acid, or with titanous chloride, in a clean tube, with a cap of filter paper spotted with lead-acetate solution over the mouth. A brown stain denotes the presence of sulphur, and on this evidence one presumes the presence of a sulphide dye. A positive result should be confirmed by bleaching the sulphide color to a pale brown with hot "chemick" and acetic acid, also by bleeding and staining white cotton when boiled with sodium sulphide and alkali. Cotton dyed with methylene blue will often give a brown stain, due to the presence of sulphur introduced in dye-manufacture, but this dye should be detected by confirmatory tests. Sulphide dyes on wool are more difficult to detect, and may be returned as vat-dyes unless a bleaching test with "chemick" is done.

8. Vat-dyes and sulphide dyes are usually reduced with hydrosulphite and reoxidized again in the air. The vat-dyes often reduce to a distinctly different-colored product, and stain white cotton in caustic soda along with hydrosulphite or glucose. The indigoid vat-dyes sub lime with colored vapors on heating, and many also dissolve in chloroform (see Holden's tables).

9. The chemical subdivision of basic, acid, direct cotton, and mordant dyes is obtained by boiling with 10 per cent formaldehyde-hydrosulphite, to which may be added a little anthraquinone to strengthen the reducing action. In the case of basic dyes on cotton the tannin mordant interferes in some instances, and the dye may be transferred to a bit of white wool for the purpose of this test by first removing the tannin with caustic-soda solution, preferably saturated with common salt, and then boiling with white wool and a drop of acetic acid. On boiling with formaldehyde-hydrosulphite, or titanous chloride or acid stannous chloride if this is not available, the dye may be decolorized, in which case, after rinsing, it is exposed to air for ten minutes. If the color is not restored, it may be oxidized carefully with one drop of bichrome, peroxide, or persulphate, and a little water, warming carefully. This test is often ruined by too rapid oxidation, which bleaches the shade instead of restoring it. If the color cannot be made to return, the dye belongs to the nitro or azo class. To the latter class belong most acid, direct cotton, and acid-mordant dyes. Tables are required, and should be carefully followed in order to obtain a chemical classification, unless the analyst possesses a sufficient knowledge of color chemistry.

10. The detection of the individual dyes present in compound shades is admittedly difficult, and tables afford little help in themselves. Where the dyes present are all of different classes—e.g., as is frequently the case with commercial indigo navies—there is not so much difficulty, as bleeding at any stage can be followed up by repeating the treatment until no more dye comes off. The extracts are mixed, concentrated, and dyed on wool, and tested separately. Frequently, however, mode shades may be dyed with a mixture of dyes of one class—e.g., acid dyes on wool, or direct cotton dyes on cotton. These mixtures provide the most difficult problems; however, with time and plenty of material, human effort can solve any problem of this sort which human ingenuity has constructed. In some manner

Columbus

was hailed a hero when he discovered this Western World. Here in the freedom of two great nations, Canada and America, have been born many greater discoverers than Columbus, who have contributed to the welfare of mankind.

Today we are basking in the white light of Edison's wonderful discoveries in electricity. Wright Brothers have enabled us to leave behind the slopes of toil and the vales of disappointment and float away on the zephyrs of the azure sky.

REFINITE, the wonderful mineral discovered and perfected by The REFINITE Co., removes from any water all the hardening salts, making it soft as melted snow. A boon of unmeasured value to Laundries, Textile Mills and kindred industries.

Write today for information on this latest and greatest discovery.

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Southern Representative:
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904 Fourth Nat'l Bank Bldg.,
Atlanta, Georgia.

the dyes must be individually separated from the compound shade and dyed up separately for testing. Sometimes by partial reduction or oxidation one dye may be destroyed and another left. Fractional bleeding into various solvents must also be tried to obtain a separation followed by redyeing separately. One dye, after reduction, may return again in air, or on oxidation, and another may not. Again, it may happen that sufficient of one or two dyes can be separated to identify them, while another dye cannot be bled off or obtained free from these. In that case their reactions mixed may be obtained, and the contributions of the known dyes allowed for. This is often possible where a mixture of dyes of the same class is used, as it is usually done, for purposes of matching, and they are of different colors.

11. For more precise and certain identification the results of analysis should be checked by suitable fastness tests, preferably by comparison against a sample dyed to match with the dyes indicated by analysis. In any case it is always useful to test fastness to cross-dyeing, alkali, ironing, bleaching, etc. The color reactions given with strong sulphuric acid, nitric acid, caustic soda, alcohol, etc., are much quoted in books, and are useful in the final stages of analysis, but generally unreliable when used alone.

12. The simplest way of identifying a dye powder or paste is to dye it on small samples of wool and cotton by various methods, and test the best dyed samples by the methods described. Some mordant dyes are put out in powder form, as bisulphite compounds soluble in water. The presence of these is revealed by heating with a little dilute sulphuric acid, when a smell of sulphur dioxide (burning sulphur) is obtained.—*The Textile Manufacturer.*

The Warren Soap Manufacturing Company of Boston Appoint Southern Agents.

The Warren Soap Manufacturing Company of 77 Summer Street, Boston, Mass., has made arrangements with the Parsons & Barr Company of Charlotte, North Carolina whereby the latter Company is to act as their agents, in the southern states.

The Warren Soap Manufacturing Company is perhaps the oldest and largest soap manufacturing concern in the country that devotes its entire time and attention to the manufacture of textile soaps, and has among its customers the leading cotton, woolen, worsted and silk mills in the country.

The product of its factories combine all the leading soaps used in the trade, including olive, palm, tallow, oleine, cocoanut, etc., in their various forms, that is, bar, solid and chip. They also manufacture a complete line of softeners.

For economy and efficiency their new process soaps have made a decided hit in the textile trade, and are said to be in great demand by the more critical users of such goods. They also manufacture special soaps for special purposes.

Any inquiries regarding prices, samples, etc., directed to Parsons & Barr Company, Charlotte, North Carolina, will receive prompt and courteous attention.

Every employee is satisfied that he is worth more to his employer than his pay envelope indicates.

Popular Colors and Shades.

Education in color is proceeding much faster than most of those interested in the co-ordination of color and the production of an American color card believed possible. Instead of taking many years to build up an interest in color sufficient to influence manufacturers of all fabrics and related industries to accept the card as standard within two years the circle is practically complete. Almost all manufacturers of these goods are following the American card, having learned already that it embodies the latest and best color information available.

Unquestionably the method of securing the information given on the card is largely responsible for this success. Instead of relying upon the knowledge of one or two men, even though they be the recognized leaders in their specialty, the information is collected from a great many. Each industry contributes information, giving its idea of leading colors for the coming season. When all the fabric lines have done this the range is almost complete. But along with them are included milliners, dressmakers, costume manufacturers, hosiery knitters, manufacturers of straw for millinery and other purposes, and other important trades more or less closely connected with the textile trades.

Obviously information gathered in this way will exceed in value and be more nearly accurate than that which is obtainable from a single man, or a number of men engaged in one industry. What is needed in work of this character is a wide range of information, obtained from those who are actively engaged in practical business.

American ideas of concentration of effort prevail in this making of a color card. And the concentration includes so many different industries which are dependent for their success largely upon accurate information regarding color. It is this fact, as much as any other which has made the American card standard so soon after its first introduction.

But the persons interested in issuing the card are by no means finished with their work. They are getting more and more information each season and the card impoves in value proportionately. Interested persons voluntarily give information about colors in their respective industries and the value of the card itself is enhanced thereby. Not the least of its benefits is the co-ordination of all this information and the stimulation of study of color with reference to its relation to the various industries where it is applied. The more individual study the better it is for their own personal business and the particular branch of the textile, or allied trades, in which they are engaged.

The American card is responsible for the present attitude of American textile manufacturers and users. They never realized the conditions before, but now they understand how helpful is such accurate information. Fewer poor selling colors are brought out each year and as the influence of the card extends through more trades practically no slow sellers will be brought out.

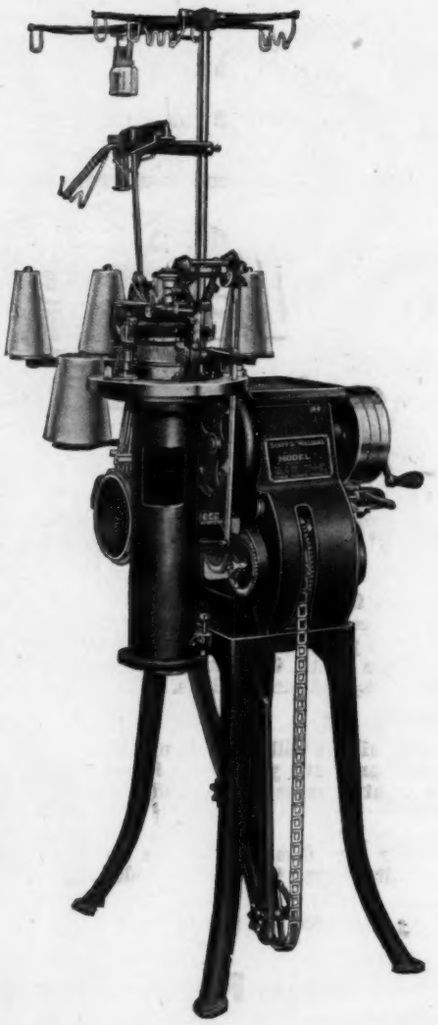
Do a man a favor and he will be very apt to have a partial loss of memory.

It is better to owe an apology than money.

KNITTING SECTION

The Attention of all Manufacturers of

WOMEN'S HOSE



is invited to our new

Fashioned Welt Machine

MODEL K

This machine produces women's hose with an inturned knitted welt similar to that produced on full fashioned machines. The machine has all the features of our other Models--each stocking being dropped from the machine complete, except for the looping of the toe. It is fitted with five yarn changing fingers, inserts an "anti-run-back" course, and the welt being knitted on the machine, has all the elasticity of the fabric, and may be made as wide as desired.

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What About Your Mill Office?

IS your office just a plain "cotton factory" office with worn-out furniture and inefficient filing systems, etc? Or is it a modern "Textile Mill" office, with up-to-date office furniture and "easy of access" filing systems—an office that has a brisk, business-like look to it?

Let us make your office up-to-date. We carry everything for the mill office, —desks, chairs, tables, Globe-Wernicke filing cabinets,—anything that is used in an office.

Our Prices are Right—
Our Service is Prompt

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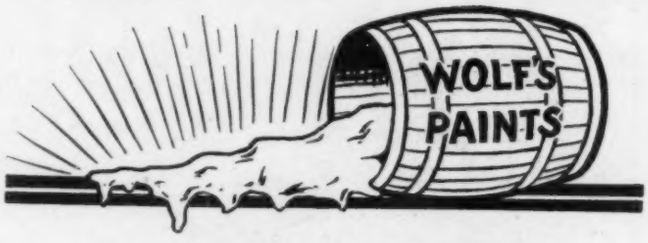

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It is one of the few mill white paints that meets the demand for efficiency and economy in this kind of material. It is no experiment. It's a paint that has "made good" in some of the largest mills of the South, including the Henrietta Mills, Hawthorne Spinning Co., and many others. Its use is spreading day after day.

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A trial order will demonstrate the superior qualities of Wolf's Mill White. Send in an order today.

Price per gallon, $1.60.

Leon L. Wolf Paint Company,
304 Lincoln Inn Court, Cincinnati, Ohio.

Cost Accounting in the Knitting Mill

BY RALPH H. BUTZ.

Methods of Wage Distribution.

In a previous article I have given an explanation of a simple, yet practical method of recording the movement of material, and the forms required by the cost accountant to record such movements. Material is the fisrt item of expense that enters into the manufactured product. The second element of expense is wages, which is the subject for this article. The distribution of labor cost to the various jobs in process is quite simple, although reasonable care must be exercised in order that such distribution may be accurate instead of basing it on estimates. Cost keeping should not be confused with general bookkeeping. The prime object of a costing system is to segregate the various items of expense incurred and apportion them to that set or class of goods for which the expenses were incurred. The object of general bookkeeping, on the other hand, is to record those transactions which involve the fiscal condition of the organization.

Other manufacturers in various lines are having the same experience as the stove manufacturer, but the cost accounting system is aiding them to inaugurate a better business policy, which is necessary to obtain continued prosperity.

In considering the distribution of wages it is convenient to separate this element of cost into two distinct classes. The first class is direct or productive labor. This includes all labor which is directly expended in producing a given class of material, and can be directly charged to a certain job. The second class is indirect or non-productive labor. Indirect labor is a better term than non-productive, because indirect labor is in a certain sense productive. This includes such items as superintendence, general labor, machinist, etc., the labor charge for which can not be made to any particular job, because this labor was expended on all the jobs in process at the time. Indirect labor will not be considered at this time, since it properly belongs to factory

WAGES ANALYSIS SHEET from _____ to _____

Name	Job 154		Job 165		Job 176		Job 184		Job 198	
	Hrs.	Amount	Hrs.	Amount	Hrs.	Amount	Hrs.	Amount	Hrs.	Amount
Annie Jones	6	1.20	40	8.00			4	.80		
Grace Brown									50	9.00

Fig. 5. A Time Record or Wages Sheet.

Many manufacturers do not realize the importance of cost keeping. In this connection it is interesting to quote from an address delivered by Robert E. Belt, Chief Accountant of the Federal Trade Commission. He says in part:

"A manufacturer of stoves has been making two styles, both on a fairly large scale, and on both he considered he was making a profit, as his balance at the end of the year was on the right side of the ledger and was fairly satisfactory in amount. But for some reason, not clear to him, the one style was selling much better than the other, so he gave orders to his salesmen to drop the one and push the good seller. Everything went along well, but at the end of the year things did not come out right. He was at a loss to understand the situation; so he called in an accountant, and much to the manufacturer's astonishment the accountant convinced him that the stove he had been pushing had been sold for years at a loss. The only profit he had ever made was on the stove he had slighted for the reason that it was not selling as readily as the one he had been disposing of at less than cost."

overhead, which will be treated later.

In the average mill there are time workers and piece workers. The time records must be so arranged that the necessary details for both classes may be recorded in one time book or wages sheet. Such a record must necessarily be made to suit the particular requirements of one mill. Each mill has different standards, and a record that would be suitable for one might not be available for another. One form that has been adopted in various instances is illustrated in Fig. 5.

In a mill employing fifty operatives the total hours of direct labor per week may be estimated at 2500. There may be ten different jobs in process, and in order that each job may be charged with the amount of labor consumed the timekeeper must necessarily keep a record of the job number upon which each operator is working. For this reason the Job No. column is required on the time sheet. At the end of each week, or pay roll period, a summary is made of the hours and wages to be charged to each job, and the journal entry is made from this sheet. A summary sheet is illustrated herewith in Fig. 6.

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Hosiery Machines

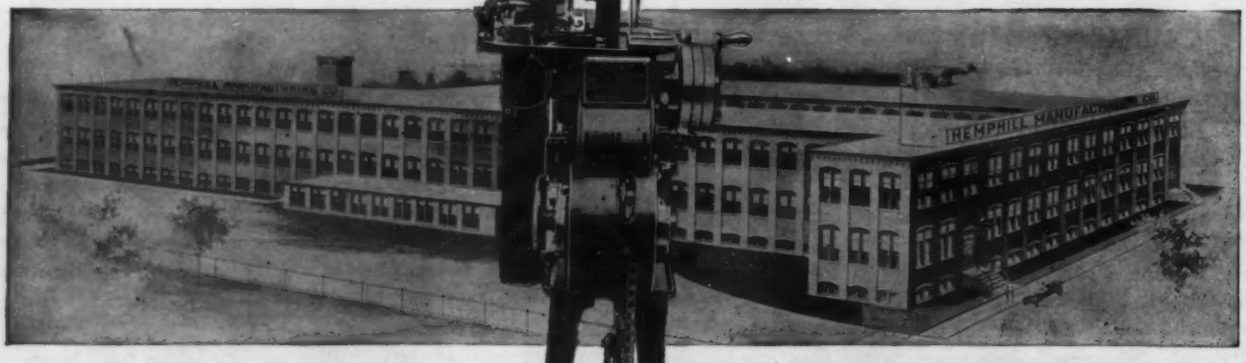
More than 29,000 in Successful Operation

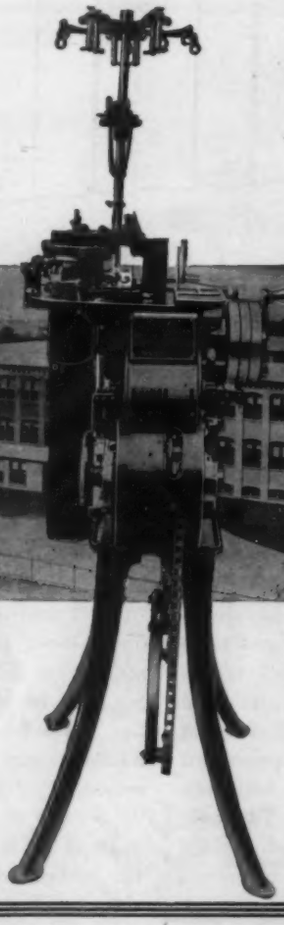
These new machines have made possible the success of new lines of extra fine gauge hose and half hose.

Many leading mills of the country are now largely equipped with these new machines, and their absolutely successful operation has been demonstrated.

Standard Gauge
260-$3\frac{3}{4}$"

Extra Fine Gauge
**280-$3\frac{1}{2}$"





All parts easily accessible from front of machine.

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PAWTUCKET, RHODE ISLAND

NEW YORK OFFICE 350 BROADWAY

PAY ROLL from _____ to _____

Name		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total	Rate	Amount	✓
	Job										
	Hrs.										
	Doz.										
	Job										
	Hrs.										
	Doz.										
	Job										
	Hrs.										
	Doz.										
	Job										
	Hrs.										
	Doz.										
	Job										
	Hrs.										
	Doz.										

Fig. 6. A Summary Sheet.

When wages are paid for direct labor, the Direct Labor in Process account is charged on the general ledger.

Dr. Direct Labor in Process
Cr. Cash

The entry for the cost ledger then takes the following form:

Dr. Job No. ———
Dr. Job No. ———
Dr. Job No. ———
Dr. Job No. ———
Cr. Direct Labor in Process

The Direct Labor in Process account in the general Ledger is the controlling account over the Direct Labor in Process account in the cost ledger, and should be in agreement at the end of the pay roll period.

We have previously shown that when a certain order is completed it becomes necessary to close the account in the cost ledger for the Job No. The entry for this purpose should be,

Dr. Material in Process
Dr. Direct Labor in Process
Cr. Job No. ———

The entry for the general ledger should be,

Dr. Finished Product in Stock
Cr. Material in Process
Cr. Direct Labor in Process

It should be remembered that the above entries are given only as an illustration of the method, and not as being complete. There is a third element of expense, Factory Overhead or Manufacturing Expense, to be included in the entries before they are complete. This item will be considered in another article.

In treating the method of recording wages no mention has been made of mechanical time recording systems, which are in use in many of the larger mills, and which promote the efficiency of the accounting department. The manufacturers of these machines and systems make a specialty of devising for the individual manufacturer an efficient method to meet his most exacting requirements. These systems are of so many varieties that to describe them would require considerable space.

Each manufacturer has his own method of paying the wages on pay day, and most of the methods in vogue are very simple, in fact so simple that the case of the padded pay roll may easily present itself. In making up the wages sheet, and paying the wages, it is advisable to make more than one man responsible, for in this manner it is easier to detect errors and defalcations when they occur. Where one man has charge of the pay roll and the paying of the wages, there are many possibilities of this sort, and the manufacturer may never know the real facts.

Of course, this is a matter to be dealt with in the fiscal accounting department rather than in cost accounting, but it is of such importance that a short explanation here is not out of place.

A Unique Catalogue Binder.

The Merrow Machine Company, Hartford, Conn., manufacturers of the Merrow high speed overseam, overedge, and shell stitch machines for finishing all kinds of knit or woven fabrics, have just issued to their customers a most complete pig-skin loose-leaf binder, in which is bound their illustrated catalogue and other descriptive circulars regarding their machines. This pig-skin binder is in black, with the name of the customer embossed in gold thereon, and also the statement that it is presented with the compliments of the Merrow Machine Company of Hartford, Conn. The catalogues are bound in with a black silk cord, and thoroughly illustrate the many high grade products manufactured by this well known organization. It not only contains lists of spare parts and their numbers, but also descriptions of the machines with the attachments and special devices therefor and samples of the different classes of work which these machines will perform. It is a most complete and conveniently arranged catalogue announcement.

In places where it is necessary to have two pulleys closer together than the width of either belt, a guard should be so placed that it is impossible for the belt to slip off between these pulleys, for in case the belt should run off, a sprung line shaft or broken counter shaft is sure to follow. Several instances are known where serious accidents have occurred through neglect to provide guards.

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The Seam that Sells the Garment

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Finished on the "Flatlock" Machine

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Patented
"UNION SUIT" PATENTED **SEAM**

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It is of paramount interest to manufacturers because it produces at high speed a perfectly strong *FLAT SEAM* in one operation, superseding all other kinds of seams.

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It makes an entirely new kind of seam in an entirely new manner. The fabrics are united edge to edge, resulting in an absolutely flat seam that is also smooth and soft.

It joins the ribs to the legs and sleeves, thus obviating the slow and expensive looping process.

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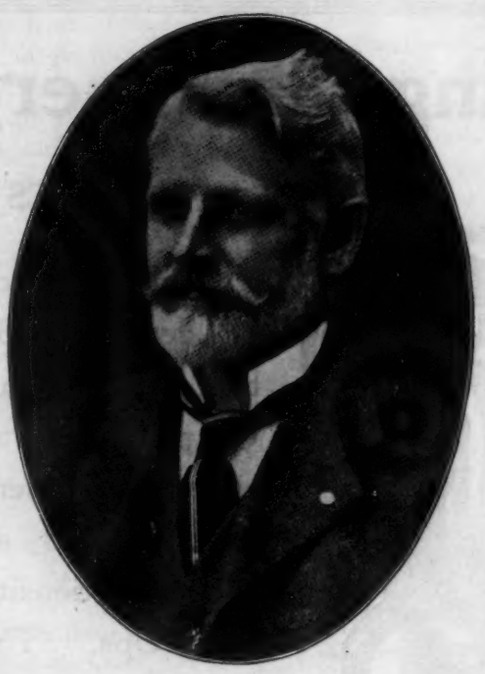

Fred W. Simons.

Fred W. Simons, treasurer of the Simons & Struve Hosiery Company, Frankford, Philadelphia, Pa., in which he was the active executive, died suddenly on the night of February 26. Mr. Simons was president of the National Association of Hosiery and Underwear Manufacturers from May, 1908, to May, 1910, and since his retirement as president has been a member of the Advisory Board. He was a charter member of the Association, and by his counsels and devotion to its purposes was a material factor during its early struggles, aiding largely in bringing the organization to its present high plane of strength and usefulness.

Born in Nottingham, England, 56 years ago, Mr. Simons came to the United States when a young man and soon thereafter became identified with the industrial life of the country of his adoption. He was a successful manufacturer and his company for years has been known as one of the important manufacturers of hosiery.

Readers of COTTON will especially remember him as the author of the very interesting series of tariff articles which were published in these pages a few years ago, under the caption, "Benign Protection." He was a sincere student of political economy, an ardent supporter of the principles of arbitration, and an earnest worker in those fields which tend toward human betterment. He was one of that type of men who so well illustrate those beautiful lines by Burton Braley:

Back of the motor's humming,
Back of the belts that sing,
Back of the hammer's drumming,
Back of the cranes that swing;
* * * * *
—Back of them stands the schemer,
The Thinker who drives things through;
Back of the job—the Dreamer,
Who's making the dream come true!

Calculations for Knitted Fabrics.

BY WILLIAM DAVIS, M. A.

ESTIMATION OF LENGTH.

The factors envolved in this calculation are given in formula 3 where it will be noted that the weight, number and basis series are transferred to the top of the line, whilst the courses, width and take-up appear on the bottom of the line. This indicates that these two series are always connected and mutually interchangeable.

Example 6. Find the length of a knitted fabric which can be produced from 600 lbs. of 2/22's cotton counts. There are 28 courses per inch, 66 inches of width and a take-up of 2. Following formula 3 we have:

$$\frac{600 \times 11 \times 840}{28 \times 66 \times 2} = 1500 \text{ yards of fabric}$$

For practical purposes 600 lbs. of yarn would never give 600 lbs. of cloth, a certain allowance having to be made for waste in various forms, including the highly distressing "Invisible waste." If the waste in this case be taken as three per cent, then this could be taken off the yardage thus: 1500 less 3 per cent = 1500 — 45 = 1455 yards actually obtained.

Example 7. A striped hosiery fabric is made up of 2/56's cotton and 40/2 spun silk and used in the ratio of 4 courses of the cotton to 1 of the silk. There are 200 lbs. of cotton in stock and it is required to know what length can be produced and also the weight of silk which will be required to work in conjunction with the cotton for this length of fabric. The fabric is worked with 40 courses per inch, has a take-up of 2⅓ and width of 72 inches.

The courses per inch of each yarn must first be ascertained. As the two yarns are inserted 4 courses cotton to 1 course of silk and there is a total of 40 courses per inch, one fifth of these will be silk and the remainder cotton: Thus 8 courses per inch of silk and 32 courses per inch of cotton. By using formula 3 the length of cotton made can be calculated:

$$\frac{200 \times 28 \times 840 \times 3}{32 \times 72 \times 7} = 875 \text{ yards.}$$

For the second part of the problem we require to find out what weight of silk need be ordered to complete the webbing and this can be found by using the formula number 1 which is stated as follows:

$$\frac{875 \times 8 \times 72 \times 7}{40 \times 840 \times 3} = 35 \text{ lbs. of silk.}$$

Example 8. Find the length of fabric which can be worked from 21 lbs. of silk in a fabric worked as follows: 10 courses 2/36's worsted at $1.00 per pound, and 2 courses 60/2's spun silk at $3.00 per pound. There are 42 courses per inch, the take-up is 2½ and the width 63 inches.

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The characteristics of a knitting machine, like those of an individual, are determined by its origin and history; just as knowledge of the individual's family, schooling, and early life are desirable for the formation of an idea of his characteristics, so knowledge of the plant, personnel and ideals involved in the construction of the knitting machine are necessary for an understanding of its merits. Investigate the origin of our knitting machinery.

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Obviously if we find the length produced from the silk yarn weight under these conditions, it will give also the length produced of the worsted. Of the total courses per inch 5/6 are worsted, and the remaining proportion, one sixth, silk, so that the silk has 7 courses per inch and the worsted 35 courses. Using formula 3 with the particulars given for the silk we have:

$$\frac{21 \times 60 \times 840 \times 2}{7 \times 63 \times 5} = 960 \text{ yards of cloth.}$$

Using the length thus obtained with the particulars given for the worsted in formula 1 we can obtain the weight of this material which will be required:

$$\frac{960 \times 35 \times 63 \times 5}{18 \times 560 \times 2} = 525 \text{ lbs.}$$

From these particulars it is an easy matter to find the cost of the piece, the price per yard and the weight expressed in ounces per yard. The price may be stated thus: 21 lbs. of silk at \$3.00 = \$63. 525 lbs. of worsted at \$1.00 = \$525. Total weight = 546 lbs. Total cost = \$588. Length produced = 960 yards.

$$\frac{588 \text{ dollars}}{546 \text{ lbs.}} = \$1.08 \text{ per lb.}$$

$$\frac{588 \text{ dollars}}{960 \text{ yards}} = \$0.61 \text{ per yard.}$$

Total of 561 lbs. = 561×16 ozs.

$$\frac{561 \times 16}{960} = 9.35 \text{ ozs. per yard.}$$

In the last two items of price and weight per yard various allowances would require to be made for practical accuracy, but it is not desirable to elaborate that here.

Example 9. There are 100 lbs. of a silk and merino twist yarn in stock, 80/2 spun silk twisted with 36 merino (cotton counts). The silk is \$3.50 per pound and the merino \$1.25 per pound. There are 48 courses per inch, 60 inches wide with a take-up of 3.

There are several ways of doing this problem and for the first, it is necessary to find the average counts of the folded yarn and in the same calculation the price per pound of the materials and the weight percentage can be given. These are given as follows: 80 hanks of 80's = 1 lb. at \$3.50 = \$3.50; 80 hanks of 36's = 2.2 lb. at \$1.25 = \$2.75; 80 hanks of twisted yarn = 3.2 lbs. = \$6.25.

$$\frac{6.25}{3.2} = \$1.95 \text{ per lb.}$$

$$\frac{80}{3.2} = 25\text{'s cotton or silk counts.}$$

For the weight percentage we have:

$$\frac{1}{3.2} \times 100 = 31.25 \text{ per cent of silk.}$$

$$\frac{2.2}{3.2} \times 100 = 68.75 \text{ per cent of merino.}$$

Having obtained this full and accurate information we can proceed to obtain the length which can be worked, two methods being open to our use. As the silk and merino are in the same thread, it is obvious that if we find the length which can be obtained from a given weight of the silk, this length will be the same for the merino. Thus the weight of the silk or that of the merino may be taken to find the length. Taking the weight of 31.25 lbs. of silk as being the proportion of the 100 lbs. we obtain the result by using formula number 3:

$$\frac{31.25 \times 80 \times 840}{48 \times 60 \times 3} = 243 \text{ yards approximately.}$$

Taking the weight of the merino:

$$\frac{68.75 \times 36 \times 840}{48 \times 60 \times 3} = 240 \text{ yards approximately.}$$

Thus if it happened that we had only the weight of the one material we should still be able to find the length obtainable. This is often a matter of concern for the practical man who has a limited weight of a certain material in stock and he wishes to know before hand how far it will go or how many yards of a certain fabric it will produce.

The third method by which the length can be obtained in the last calculation is by taking the counts of the twisted yarn as obtained, namely, 25's merino or cotton counts. By using this number we may obtain the length in one calculation, using again formula 3:

$$\frac{100 \times 25 \times 840}{48 \times 60 \times 3} = 243 \text{ yards approximately.}$$

The object of these illustrations is to demonstrate with a certain degree of plasticity how accurately the various factors envolved in the production of knitted goods may be under the control of an overseer who has a thorough knowledge of the basic principles of yarn calculation, and such calculations have the advantage that they can be learned and applied with perfect results by any person who has a knowledge of the ordinary operations of arithmetic. The latter variety of calculation must not be confused with the operation envolved when there are several factors in the

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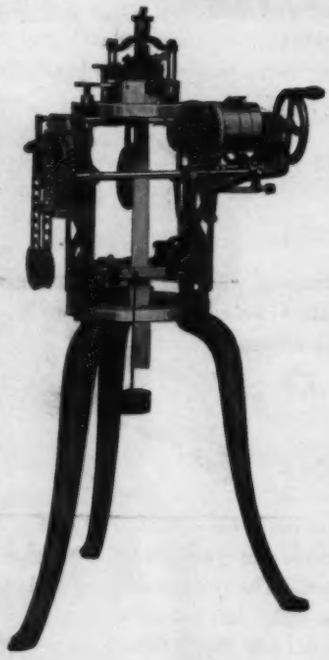

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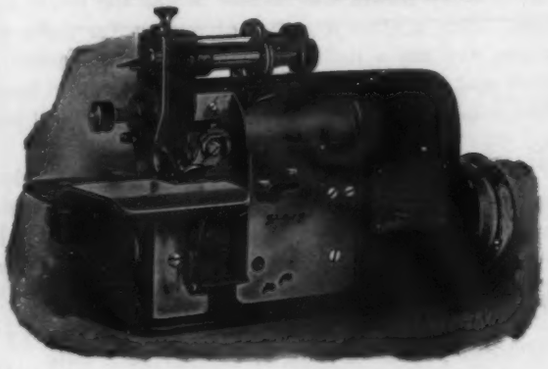

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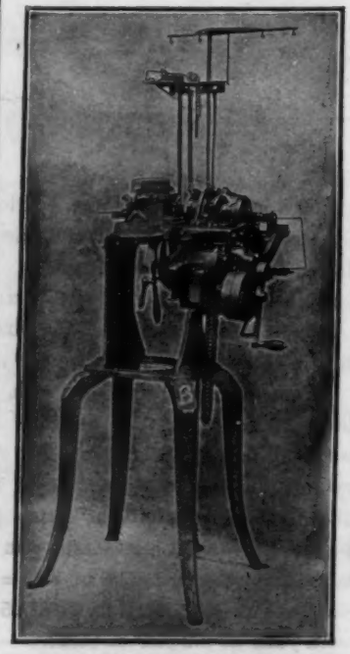

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cloth, each of which are inserting courses independently and appearing separately in the fabric. In the latter example the two yarns, merino and silk are twisted together for the well-known merino and silk yarn of commerce. This calculation is often confused with that of finding the average counts in a fabric where different counts and qualities of yarns are inserted into the fabric separately.

Example 10. Find the increase in weight produced by the insertion of a plating yarn of a counts equivalent to 24's worsted with a take-up of 2.5, 48 courses per inch, 243 yards, 60 inches wide. By formula 1:

$$\frac{243 \times 48 \times 60 \times 2.5}{24 \times 560} = 130.18 \text{ lbs. weight.}$$

This result would also be obtained by taking the average count of the first cloth as 25's cotton counts and bringing the 24's worsted to cotton thus:

$$\frac{24 \times 560}{840} = 16\text{'s cotton counts.}$$

The relative weights can be obtained by inverse proportion thus, as 16's are to 25, so is 100 lbs. to 156.2 lbs. This result is based on the assumption that the take-up is the same for both yarns; it will be noted, however, that the take-up of the plating thread is 2.50 in place of 3, that is, the weight suffers a relative reduction of one sixth: 156.2 lbs. less one sixth = 130.2 lbs. which is the result as obtained by the first method. The addition of this plating yarn on the back would increase the weight of the fabric by 130.2 per cent. It is of course not part of our concern at present whether it would be feasible or physically possible to make such a great increase in the weight under the same conditions of fabric structure, in all probability the frame would refuse to receive such a great accession of courses and yarn weight but this is entirely a matter of conditions and requirements for the moment.

It may be of interest to complete the particulars of this cloth by calculating the weight per yard and the price per yard with and without the splicing yarn. It is a cloth largely composed of woolen material and in practice it would be essential to make certain allowances in respect to waste in weight during scouring and finishing, also a certain deduction would require to be made from the length on account of the shrinkage experienced in the fulling and scouring operations. Let the deduction for loss in weight be 8 per cent and that for the contraction in length be 5 per cent, this will give the following particulars: 243 yards calculated length, less 5 per cent = 243 — 12 = 231 yards. Before the addition of the plating yarn the weight of the silk and wool fabric was equal to 100 lbs. of material. This with 8 per cent off for loss in finishing gives a net weight of 92 lbs. for a length of 231 yards as just found. For the ounces per yard:

$$\frac{92 \times 16}{231} = 6.37 \text{ ounces per yard for the first.}$$

This brings a difference in the price per yard for the cost of the original material was 100 lbs. at $1.95 or $195, total cost. But this is the price of 231 yards finished. The length has shrunk but this has not been accompanied by any change in the total price of the web. The price per yard is given by:

$$\frac{195 \text{ dollars}}{231 \text{ yards}} = \$0.84 \text{ per yard.}$$

With the added plating yarn the statement of cost is as follows: 100 lbs. of material at $1.95 = $195; 130.2 lbs. of plating at 75c = $97.65, or a total of 230.2 lbs. of material costing $292.65. 230.2 lbs. less 8 per cent loss in finishing = 230.2 — 18.2 = 212 lbs. finished.

For the weight per yard, multiply the net weight by 16 to bring it to ounces, and divide by the length:

$$\frac{212 \times 16}{231} \div 14.7 \text{ ounces per yard.}$$

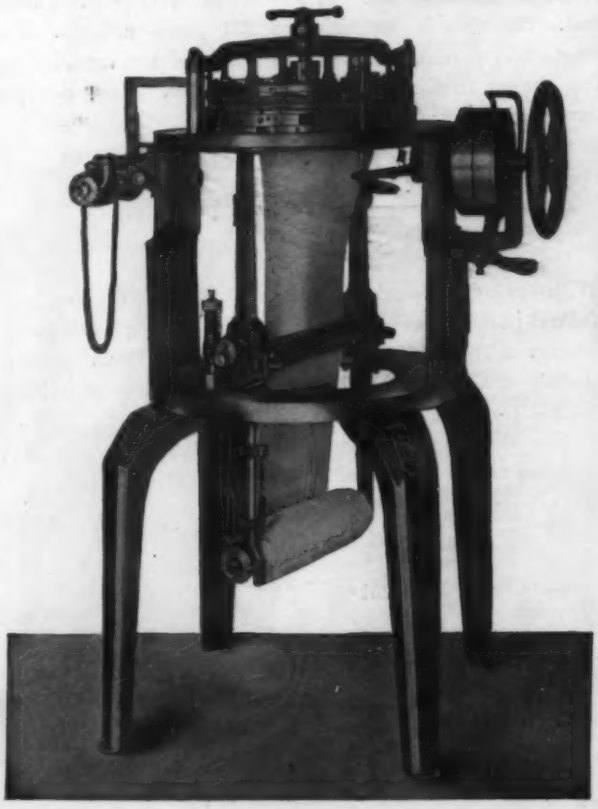
For the cost per yard we have a total cost of $292.65 for a length of 231 yards, or

$$\frac{292.65}{231} = \$1.26 \text{ per yard.}$$

If the manufacturer had needed to produce the increased weight from the original material this would have required an addition of weight from 100 lbs. to 230 lbs. or equal to an increase on the original price of 130 per cent. This calculated on the price of $0.84 per yard = $1.86. The price arrived at by using the plating yarn is $1.26 per yard so that subtracting the latter from the former: $1.86 — $1.26 = 60 cents per yard which represents the saving effected by the introduction of the plating thread on the back.

In practice it is essential to make some percentage of addition to the cost per yard on account of the waste incurred during the knitting operation. The best regulated machine has occasional press-offs with consequent waste of material before it is put right again; a certain amount of waste is also incurred in changing the bobbins and a certain portion seems to get rubbed off somewhere, in just what manner no one can tell. A percentage of the material disappears as is evidenced by a comparison of the weight of yarn delivered to the machine and the weight of cloth taken from the machine after the fabric has been worked. To obtain the ultimate price per yard for selling purposes, there would require to be made various other additions embracing the departmental costing, the selling cost, rent, and various forms of taxation. This point is one of simple arithmetic and calculations from wages earned, etc.; the fundamental points of technical difficulty have been outlined in detail in this article.

Don't follow in the footsteps of a competitor; set the pace.



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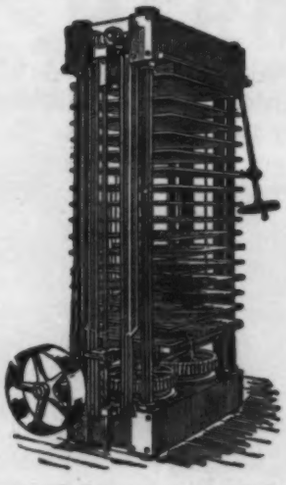

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All hosiery mills **WOULD BUY** our machines.

Write for our FREE TRIAL—SPECIAL PRICE—and SPECIAL TERMS—OFFER to mills that have none of our machinery in use.

The Knit Goods Market.

While waiting for buyers to come into the market to fill out for spring and complete fall orders, not a few knit goods manufacturers have become impatient and are quoting prices that are considerably below present values, to say nothing of contingencies for which they may have to provide.

For identically the same line of 84 needle 2 pound half hose for which a large southern mill is getting 95 cents an interior Pennsylvania manufacturer is accepting 92½, and is said to be willing to take 90 cents from preferred customers whose orders call for quantity deliveries. Other Pennsylvania mills are quoting 95 and getting it.

Another illustration of a manufacturer's eagerness for business is a quotation of 87½ cents for 18 ounce 176 needle half hose, whereas some mills are getting as much as $1 and one manufacturer reports having taken an order quite recently at $1.05. A fair average price on this class of half hose would be 95 cents, with 90 cents very low.

In contrast with this weakness of some hosiery manufacturers is the attitude of a Pennsylvania manufacturer of cotton union suits. He has delivered every dozen sold for spring, but since the first of the year has sold less than 25 dozen on duplicate orders, being unwilling to accept prices offered by jobbers, who, however, are hungry for merchandise, as is attested by the character of inquiries.

This manufacturer has put a price of $6 a dozen on a type of union suit that at last year's opening sold to jobbers for $4, and he has no idea of receding while yarn prices and labor costs remain where they are. He has closed down his mill while waiting for buyers to take a more rational view of market conditions and operating costs.

Predictions made some weeks ago that spring would witness a shortage of hosiery and underwear were not an exaggeration. Merchants who are out of the market, as though they were in no need of goods, are clamoring for deliveries against orders placed last year and threatening all sorts of dire consequences if mills do not promptly fill these orders.

It is readily understood that while merchandise at last year's low prices is coming in or is due, buyers would be inclined to balk at today's quotations, notwithstanding the absence of any ground for hope of a decline. It seems to be overlooked that the population is as large as a year ago, that every man, woman and child capable of or willing to work is employed at the highest wages ever paid anywhere in the world, and that they must be clothed. High prices of food may have forced some degree of curtailment, but there is no doubt that as things go along it will be discovered that it were better to curtail in the matter of luxuries, the "movies," etc., than in necessities.

Today's prices are high only in contrast, as those of last year were. Yet if the country could return to the prices that prevailed a year ago the average consumer would feel that merchandise had gotten back to a normal level. Such is the substance of the view of some very important interests, and manufacturers who subscribe to it do not include those who are letting their products go, at ridiculously low prices, to jobbers who are planning for a harvest as the year advances. It is in evidence that large houses who last year overbought and are taking in all that mills can deliver have not been selling recently on the basis of their purchase price, but are taking advantage of the higher scales.

Among the reasons for believing that there will be no speedy relief from the present and prospective shortage of knit goods is the fact that there are few mills operating better than 80 per cent of capacity. There is much idle machinery due to needle scarcity and the indifference of labor, and to this may be attributed largely the failure of many manufacturers to make deliveries. In a number of instances, however, this condition is due directly to the neglect of mills last year to cover for their yarn requirements, taking the view, as many do now, that the market would decline. When they later went out to buy yarns for making what they had sold they found that they were doomed to a loss. As yarns advanced they forgot all about their commitments and took on new business at the higher prices.

That there is looming a deadlock between mill and merchant on the price question was made apparent at the March meeting of the Pennsylvania Underwear Division of the National Association of Hosiery and Underwear Manufacturers. Mill owners stated in all sincerity that so long as there continues the present disparity in prices of materials and manufactured goods they would not plan for fall business, and more than one announced they would suspend operations until they could make their production show a profit.

The meeting was open to hosiery manufacturers, a number of whom were in strong accord with this sentiment. Mills generally were reported sold up to June or July, and it was the almost unanimous opinion that it would be the part of wisdom to accept business for only two months beyond that period, taking the market as it comes rather than operate on a speculative basis.

Several leaders in the Pennsylvania knitting industry figured on higher yarn prices, whether the United States goes into or remains out of the war, and no one expressed the slightest fear of any material slump in the event of peace, making all due allowance for a temporary jolt to confidence. The sentiment of the meeting carried little comfort to buyers who are waiting for a drop.

Confidence in the future of the knitting industry for several years at least is evidenced by the additions to equipment. There is brisk buying of machinery, according to the leading machine builders. Many of the new installations is in the direction of modernizing mills and working toward a saving of labor while improving production. Manufacturers who are following this policy necessarily will be in an advantageous position should there come market reverses, in which event the fossilized mill might be crowded out of business.

More hosiery could be sold were it possible to manufacture it. As illustrating the shortage, four Pennsylvania mills from which reports have been received are short in the aggregate 235,000 dozens, all due and past due. Another mill admits that it cannot deliver 220 cases sold last year for spring and for which merchants are begging. Little of this stuff will go out in time to reach the retailer for the summer trade. The heaviest shortage reported by any of the mills referred to is 92,000 dozens.

There is little stock between mill and consumer, so that it would appear there is warrant for the new equipment, and no excuse for manufacturers accepting prices under the market. Mills guilty of this infraction of the law of

business are regarded in some circles as playing the game as it was played by some manufacturers last year. Should the market go off they would insist upon buyers' acceptance of the merchandise; if it advances and they happen to be short of yarn they simply would repudiate their contracts.

Fear that there may be a repetition of short deliveries is believed to be responsible for the indifference of buyers. They are sustaining losses, many of them, because they cannot get the merchandise which they bought and, in turn, sold, and are in no hurry to risk being caught for the coming seasons. Shabby treatment on the part of some manufacturers doubtless has been a contributing factor in the deferred buying. In view of past experiences, merchants may be expected to be slow about sending salesmen on the road until they have reasonable assurance that they will get the goods.

There is noted greater stability in mercerized yarns, which a few weeks ago appeared to have no established price. This may be due to the upward movement in cotton yarns or the very high price for artificial silk, attributed mainly to the long strike at the plant of the Viscose Company.

An important eastern mill is quoting $2.50 for ladies' mercerized 220 needle hosiery, and high finish goods are heard of at $2.75. This, however, is exceptional, and quotations as low as $2.35 have been heard quite recently. At $2.40 this class of merchandise would be regarded as very attractive. A southern mill is understood to have taken an order for 5000 dozen for a Russian account, price not stated.

Efforts made recently among hosiery manufacturers for establishing an open price exchange, while not entirely abandoned, seem not likely to prove successful. Not enough manufacturers in any given line were willing to exchange confidences in the matter of price to make an experiment of the project seem worth while. It is understood that several mills on coarser lines still have hopes of getting all of their competitors to agree to submit prices and descriptions to a central exchange, which each week would send to all the mills cooperating a complete summary of all the reports.

A New Knitter's Association.

The North Carolina Knitters Association was formed in Charlotte, N. C., on March 20th, when representative knitters from various parts of the state met. While the attendance was not large, the new association seems likely to bring in practically all the knitting manufacturers of the state. At the meeting an interesting paper was read by W. A. Graham Clark, on "The Hosiery Trade of South America," which emphasized the importance of going after business in Latin American countries.

There are in North Carolina today something like thirteen thousand knitting machines as against less than two thousand fifteen years ago. This shows the rapid increase in the state industry and manufacturers are fully aware of the necessity for making definite and permanent arrangements for trade connections after the present period of abnormal trade intercourse is at an end.

The following officers were elected: President, C. McD. Carr, Durham; vice president, J. F. Taylor, Kinston; temporary secretary and treasurer, Harry L. Dalton.

Among the Knitting Mills.

A little journey to the home of "Radium" hosiery developed a number of points of interest to the traveler among the mills. Some years ago in these columns it was reported that the Marietta Knitting Company at Marietta, Ga., had built a new knitting plant and were removing the machinery from the old plant into the new building. This new building in its present shape is a model hosiery mill. With a daily capacity of twelve hundred dozen pairs of hose, the most striking feature of its well lighted interior is the neatness and cleanliness of the whole place. Even in the dyeing and bleaching department the floor was clean at all times, and the visitor could walk about without danger of either spoiling the garments or wetting the feet, which is a somewhat unusual condition in these departments in any mill.

Across the street from the new mill building, in the building formerly occupied by the knitting machinery, is now located a thoroughly equipped paper box plant with a capacity of 6,000 boxes per day. While this capacity is considerably larger than the output of the mill requires, the slogan of the box plant manager "to make ours a little better" makes the disposal of the excess product an easy matter for the selling end of the business.

The Men Behind the Reputation of "Radium" Hosiery. Left to Right—Guy H. Northcutt, Superintendent, and Ralph W. Northcutt, Vice-President and General Manager.

Another striking feature in this older section of the factory was the manner in which it is equipped to save or reclaim every item of waste produced in the manufacture of "Radium" hosiery. In one department boys were raveling out the yarn from knitted scraps and winding this on spools. On another machine this yarn was being rewound and thoroughly straightened so that it could be used in commercial work. In another department a special sewing machine is used to repair those few damaged hose that would otherwise have to be sold as waste, and these repaired hose are disposed of as seconds to manufacturers who handle this quality of product. Another feature of this building was a department equipped with a suitable waste paper press, where all waste paper is baled ready for shipment.

There are other waste reclaiming processes utilized, but we refrain from commenting thereon more intimately, inasmuch as we did not request permission to give all this matter publicity.

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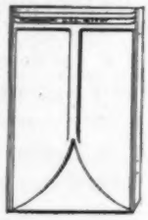

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It saves time, labor, machines and cloth.

YOU ONLY NEED ONE MACHINE where before it required two, and you get an extra strip from every bolt of cloth.

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Ga., found this interesting plant in full swing and preparations being made to add some further knitting machines in the basement of the knitting building and adjoining the singeing room. A new boiler plant has recently been installed, and everyone seemed prosperous and busy. President Harold Lamb was particularly busy, inasmuch as his active executive, J. A. Wotton, was confined to his home by illness at the time of our visit.

The Kingsport Hosiery Mills at Kingsport, Tenn., which was reported recently as being organized by W. B. Davis, will be rapidly pushed to completion. W. G. Sears, of Chattanooga, is the architect on the buildings. One of these will be 60 x 150 feet, four stories high, and the other one 180 x 60 feet and one story high. It is reported that all conveniences, including shower baths, etc., are to be incorporated in the plans, and that a part of the building will be equipped and utilized as a club house.

The Ranford Knitting Mill at Brookford, N. C., is adding a number of new machines, and will build a number of new operatives' cottages in the near future.

The Danville Knitting Mills at Danville, Va., have amended their charter to permit of an increase in capitalization to $650,000. A new addition has been built to their Bonair (Ala.) plant, 204 x 102 feet. This addition will accommodate 6,336 spindles and suitable preparatory machinery. They are also installing a new baling press.

The Carlton Mfg. Co., of Spartanburg, S. C., was recently incorporated with a capital stock of $20,000, and will manufacture hosiery and underwear.

It is reported that a proposition is on foot at Wadesboro, N. C., to build and equip a 5,000 spindle hosiery yarn mill at this place.

S. Huffman and R. O. Huffman, of Morganton, N. C., and F. O. Huffman, of Drexel, N. C., have incorporated the Drexel Knitting Mills with $30,000 capital.

At a meeting of the Board of Trade at Lithonia, Ga., about the middle of March, plans were laid for an active campaign for building up and improving the city of Lithonia. One of the first of the moves that will be made will be to persuade outside capital to locate a knitting mill at that place, and for this purpose local capital has been pledged and a free site provided, invitations to manufacturers have been extended and it is merely a matter of time when another new knitting mill will be located on the line of the Georgia Railroad between Atlanta and Augusta.

Organization has been effected by the Spring City (Tenn.) Hosiery Mill, lately noted incorporated with $50,000 capital. The company has ordered its machinery, and will build a plant for knitting hosiery. A P. Hayward is president, and A. B. Andrews, general manager, both of Dayton, Tenn., and A. D. Paul, vice president, Spring City.

The Sunshine Hosiery Co., Chattanooga, Tenn., lately noted incorporated with $100,000 capital, will establish a mill of 90 knitting machines with daily capacity 600 dozen pairs of hose. Orders have been placed for the equipment, and 125 operatives will be employed.

A frame building is being erected by the Blackwood Knitting Mills, Blackwood, N. J., in which they will install 21 out of an equipment of 86 knitting machines on which will be manufactured ladies' fine gauge 220-needle hosiery, using 1/30 combed yarns. The plant will be run by electric power and production sold direct.

Work has begun on the excavation for an addition to the plant of the United States Knitting Co., Central Falls, R. I. The new building will be 67 x 46 feet, three stories high.

The Griffin Hosiery Mills, of Griffin, Ga., which has recently been organized with T. L. Shapard as president, is manufacturing 220 needle women's hose. They already have a partial equipment of Model K Scott & Williams machines, and others are being received daily. When the entire equipment is in place, the production of the plant will amount to 400 dozen pairs of hose per day. This plant dyes, bleaches and finishes its own product, the active head of the manufacturing end of the business being Superintendent T. C. Smith, who is well known in hosiery circles.

The Hermitage Knitting Mills has been organized and started at 168 Eighth ave., North, Nashville, Tenn. It manufactures half hose and dyes and finishes its own product. George H. Booth, the general manager, advises that he is in the market for a second hand, hot plate, hand lever press. Communications should be direct.

In a list of charters just issued at Raleigh is report of the Charlotte Knitting Company, of Charlotte, capital $125,000 authorized, by R. J. Walker, J. H. Cutter, George B. Hiss, for a knitting and general textile manufacturing business. The new plant will be located in the building formerly owned and occupied by the Charlotte Trouser Company. The floor space of the building as it now stands is sufficient for 700 knitting machines. The dye house and boiler sheds will be constructed at once and will be completed in ample time to have that phase of the plant in operation by the time the machinery is available.

The three stockholders are well known men in the South. Mr. Cutter is a successful cotton broker, Mr. Hiss has large manufacturing interests in the South and Mr. Walker, as Southern manager for the Berlin Aniline Works, is well known as an important factor in the dye and chemical business. Mr. Walker will assume the active management of the mill.

The Sellers Hosiery Mills of Burlington, N. C., are to install a dyeing and finishing plant at the Burlington Mills and are in the market for the necessary equipment of dyeing and finishing machinery. A brick building 50 x 150 feet is to be erected to accommodate the finishing department and will be equipped with thoroughly modern machinery. The Sellers Hosiery Mills manufacture fine seamless hosiery and also have a plant at Thomasville, N. C.

At a meeting of the Mooresville, N. C., Chamber of Commerce recently plans were proposed for the organization of a knitting mill. A committee was appointed to see how much local stock can be secured. Quite a number of the leading men of the city are interested in this project.

The World's Star Knitting Co., Bay City, Mich., manufacturer of men's, women's and children's ribbed underwear and union suits, men's and women's seamless and women's and children's ribbed hosiery, cotton, woolen, worsted, silk and merino, has purchased an entire block adjoining its present plant, on which it will, according to report, erect additional mill buildings. D. L. Galbraith is the buyer of this concern, which operates an equipment at present consisting of 300 latch needle knitting and 100 sewing machines, 75 ribbers and 15 spring needle knitting machines.

A new knitting company has been started in Pawtucket, R. I., by Malcolm French, and is known as the French Knitting Company.

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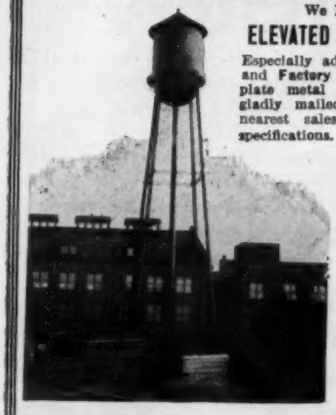

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PERFECTOL evens the dyeing colors and increases the lustre.

Directions: .Use 2 to 3 pounds of PEFRECTOL to 100 pounds of goods. In standing bath: one-half pound to 100 pounds of goods.

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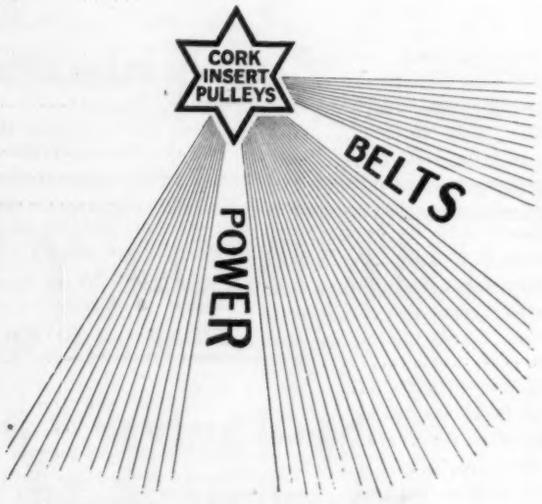

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POINT 2

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The following August he wrote:

"We have in our factory a 40" exhaust fan driven by a 6" double belt. The pulley on the fan was 8" x 6". If we drew the belt as tight as possible, which would cause the bearings to heat, the fan would run about 24 hours without belt slip, then slip would set up and at the end of 48 hours the slip would be as high as 40 per cent. Belt dressings, etc., would do good only for a short time. The life of the belt was only about 12 months. This was with a smooth cast iron pulley.

We put on a Cork Insert pulley, the belt was loosened so that it was in fair running tightness. We have not had to touch the belt for 60 days and probably will not for 60 more. There is no slip whatever, we cannot see that the Inserts are worn in the least, and the efficiency of the fan has been increased so that it has more than paid for the price of the pulley twice over in the last 60 days.

We take pleasure in giving you this report on the Cork Insert pulley which we purchased from you on June 14th."

Over five years later, on October 10, 1916, he wrote:

"Replying to your letter of October 9th, will say that the pulley we purchased from you in June, 1911, is running every day, same belt that was placed on the pulley when we started same. This belt is good for 5 years more. Even now it looks as good as it did when we first bought it. We have only taken this belt up once during the last year. We use a wire lace and it does not wear so that it breaks in a year, showing conclusively that there is practically no slip. Those pulleys certainly are money savers as regards belts."

DO YOU RUN TIGHT BELTS?

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Saco-Lowell Shops.
Southern Spindle & Flyer Co.

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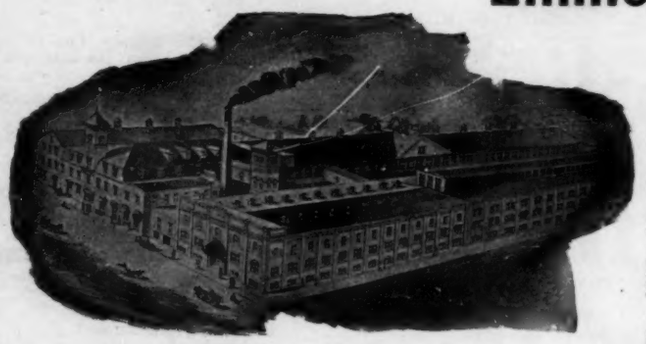

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(See Belting—Link.)

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(See Chlorine.)

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Link-Belt Company.

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(See Dyestuffs and Chemicals.)

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Saco-Lowell Shops.
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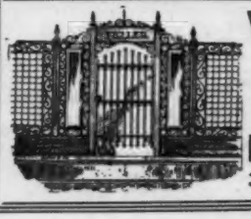

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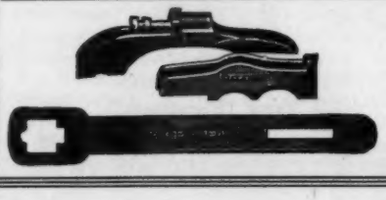

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Marden, Orth & Hastings.
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Fibre Specialty Co.
Keystone Fibre Co.
Lane & Bro., W. T.
Leatheroid Mfg. Co.
Standard Fibre Co.

Tubes—Cloth Protecting.
Southern Novelty Co.

Turbines (Steam).
Allis-Chalmers Mfg. Co.
General Electric Co.
Seeger-Walraven Co.
Western Electric Co.
Westinghouse Elect. & Mfg. Co.

Twisting Machinery
Draper Corporation.
Howard & Bullough.
Leigh & Butler.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.

Unions (Bronze).
Lunkenheimer Co.

Valves (Angle, Globe and Cross).
Foster Engineering Co.
Lunkenheimer Co.

Valves (Anti-Acid).
Foster Engineering Co.
Lunkenheimer Co.

Valves (Blow-off).
Foster Engineering Co.
Lunkenheimer Co.

Valves (Check).
Foster Engineering Co.
Lunkenheimer Co.

Valves (Gate).
Foster Engineering Co.
Lunkenheimer Co.

Valves (Non-return Stop).
Foster Engineering Co.
Lunkenheimer Co.

Valves (Pop-Safety).
Foster Engineering Co.
Lunkenheimer Co.

Varnishes.
Arco Co.
Ullman-Philpott Co.
Wadsworth, Howland & Co.
Wolf Paint Co., Leon L.

Ventilating Apparatus.
Carrier Eng. Corp.
Cramer, Stuart W.
General Electric Co.
Howard & Morse.
New York Blower Co.
Ohio Blower Co.
Sargent's Sons Co., C. G.
Tolhurst Mch. Co.
Western Electric Co.

Warp Tying Machines.
Barber-Colman Co.

Warpers and Warping Machinery.
Cocker Machine & Fdry Co.
Columbus Truck & Mfg. Co.
Crompton & Knowles Loom Wks.
Draper Corporation.
Howard & Bullough.
Saco-Lowell Shops.
Salem Iron Works.
Smith & Furbush Mach. Co.

Washers (Cloth).
American Laundry Machinery Co. The
Butterworth, H. W & Sons Co.
Cocker Mch. & Foundry Co.
Hunter Mch. Co., Jas.
Philadelphia Drying Mchy. Co.
Phila. Textile Mchry. Co.
Salem Iron Works.
Textile Finishing Mchry Co.

Washers, Graphite and Bronze.
Bound Brook Oil-less Bearing Co.

Washers, Leather.
Graton & Knight Mfg. Co.

Washers, Wooden, Oil-less.
Bound Brook Oil-less Bearing Co.

Waste Machinery (Cotton).
Howard & Bullough.
Leigh & Butler.
Saco-Lowell Shops.
Sargent's Sons Co., C. G.
Schofield Co., Wm.
Smith & Furbush Mach. Co.

Water Columns.
Lunkenheimer Co.

Water Cooling Ponds.
(See Cooling.)

Water Softeners.
Chicago Bridge & Iron Works.
Refinite Co., Inc.
Scaife & Sons Co., Wm. B.

Waterproofing Machinery.
Butterworth, H. W. & Sons Co.
Textile Finishing Machinery Co. The

Weaving.
Aberfoyle Mfg. Co

Welding Apparatus (Electric Arc).
Lincoln Electric Co.
Westinghouse Elec. & Mfg. Co.

Welding Apparatus (Oxy-acetylene)
Bird-Wilcox Co., Inc.
Burdett Oxygen Co.
Prest-O-Lite Co.

Welding—Job.
Bird-Wilcox Co., Inc.

Wheels—Fibre.
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Fibre Specialty Co.
Keystone Fibre Co.
Leatheroid Mfg. Co.
Standard Fibre Co.

Whistles (Steam).
Lunkenheimer Co.

White Way Posts.
Greenville Iron Works.

Winding.
Aberfoyle Mfg. Co.
Home Bleach & Dye Works.

Winders.
Crompton & Knowles Loom Wks.
Firsching, J. A.
Howard & Bullough, American Machine Co.
Leigh & Butler.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Stafford Co., The
Windle, J. E.

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Chattanooga Iron Works.

Wire Glass.
(See Glass—Wire.)

Wood Preserver.
Arco Co.
Certain-teed Products Corp.
Wadsworth Howland & Co., Inc.
Wolf Paint Co., Leon L.

Wood Pulleys.
Excelsior Pulley Co.

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Crompton & Knowles Loom Wks.
Draper Corporation.
Hunter Mch. Co., Jas.
Leigh & Butler.
Schofield Co., Wm.
Phila. Drying Machinery Co.
Phila. Textile Machinery Co.
Sargent' Sons Corp., C. G.
Stafford Co., The
Smith & Furbush Mach. Co.
Textile Finishing Machinery Co. The

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Makes the Strongest, Smoothest Warps; the Best Cloth and Least Seconds.

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Mfrs. of Steel Box Strapping and Steel Door Mats

ACME STEEL GOODS CO., Mfrs.

WORKS: CHICAGO, ILL. Stocks carried in New York City and Atlanta, Ga.

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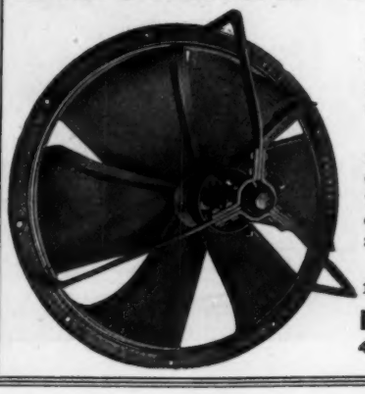

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Installed in mills, manufacturing plants, office buildings, etc., they insure the proper circulation of good, pure air—a real necessity.

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The fact that we have been making

Stencils
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for years for many mills throughout the South is "a good sign" that we can make yours "right" —try us.

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All Kinds
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The BRADLEY STENCIL MACHINE
Makes Stencils in half a minute, at reduced cost of 1-10c each
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TRY A BARREL FOR 60 DAYS

If it does not come up to your standard of what a good lubricating oil should be, and you consider that it is not worth our price—put your own value on it and remit on that basis. Isn't that a fair proposition? "A. C. C." will pare down your oil and cylinder repair bills—save your piston packing, too. It has been doing this for forty years, it will effect such a saving now—just give "A. C. C." a chance.

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FLOTA MICA
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COMES IN 5, 10, AND 25 POUND CANS.

WILL REDUCE YOUR OIL AND GREASE BILLS

and cool any hot bearing without slowing down the machinery

An ounce of Flota Mica in a gallon of oil or a pound of grease will reduce the friction load throughout your mill from the main engine to the textile finishing machinery.

Flota Mica permits of the use of cheaper oils and gives better results than you are now getting. Many concerns have cut their oil bills in half.

Flota Mica will not cake or harden, nor will it stop up the finest oil grooves.

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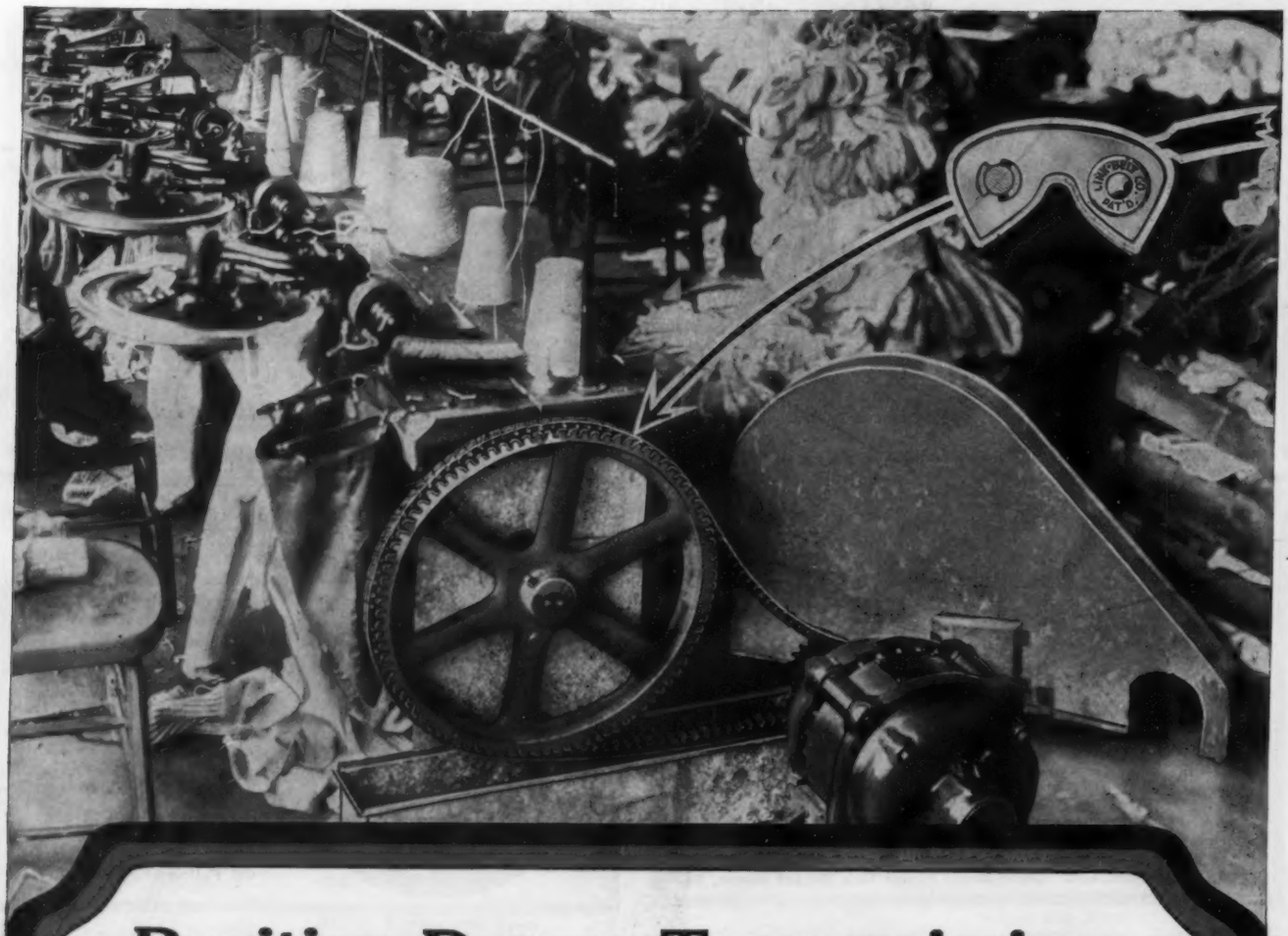

Positive Power Transmission

YOU CAN operate every machine in your mill without slip or loss of power under any atmospheric conditions. Observing mill men realize that positive drives insure the efficient use of power and labor.

LINK-BELT
SILENT CHAIN DRIVES

are positive under all conditions of load—over 98% efficient in hot, cold, damp or oily places. Study the present power transmission in your mill and decide for yourself how you can increase production and improve output by transmitting power through the Link-Belt Silent Chain Drive. It is "Flexible as a Belt—Positive as a Gear—More Efficient than Either."

Write for Data Book No. 125, which explains all about Silent Chain Drives and shows how to figure them, and to determine prices.

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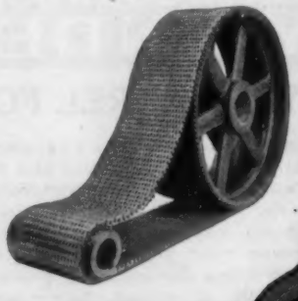
Louisville, Ky.,	Frederick Wehle, Starks Bldg.	Toronto, Canada	Canadian Link-Belt Co., Ltd.		

We have branch offices at every important port of export on the Pacific Coast, and can ship from Vancouver, Seattle, San Francisco and Los Angeles, routing European shipments via Pacific Ocean lines should this be preferable to shipping via the Atlantic.



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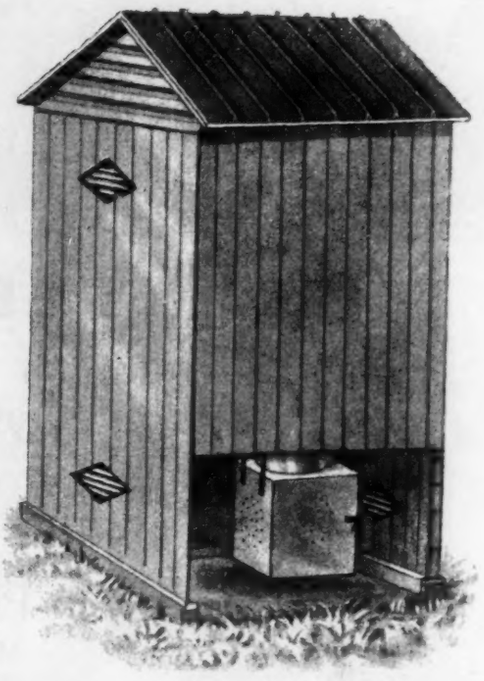

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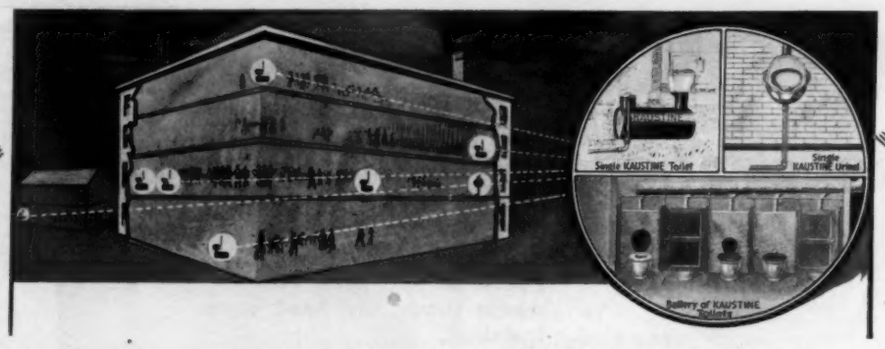
Write us for further information.

The Sanitary Products Corporation

Baltimore, Md., U. S. A.



Don't Overlook Your Sanitary Problem! In Your Mill and in the Colony Houses Insure the Health of Workmen by Providing Toilet Facilities.

Don't waste your employes' time—sap their energy and decrease their efficiency by not supplying proper and modern toilet facilities.

Your profits depend upon your workmen, and attention to their sanitation needs will pay you big dividends on any investment you may make.

Outhouses are unsanitary. They oftentimes are the cause of the spreading of diseases. They promote loitering. They create discontent.

Ordinary toilets are dependent upon water supply for their locations, require sewer connections or cess pool. Get out of order easily.

Kaustine

WATER CLOSETS AND URINALS

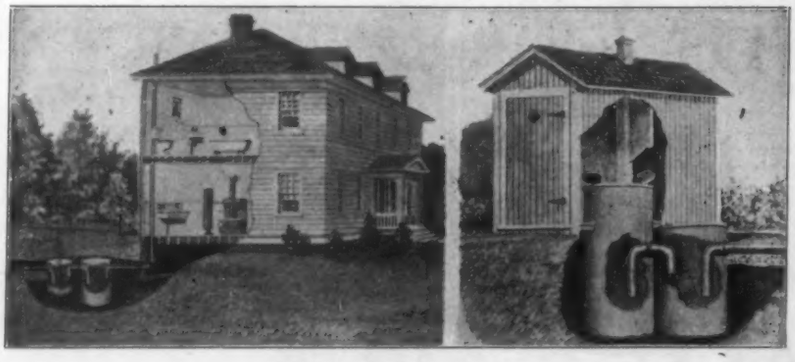
Offer the modern and perfect solution to the sanitation problem. Where they are most needed—there they can be installed—regardless of water-supply, sewerage connection or other conditions ordinarily unsurmountable.

A Kaustine Toilet is complete in itself. Sewerage is carried down through drop tube (see illustration above) into a special Armco tank, where complete chemical disintegration, sterilization and disinfection take place. There is nothing complicated about it, nothing to get out of order, and what is more, it costs less to install and maintain than a water closet.

Investigate this modern system. Leading State Health, Labor and Industrial Departments endorse it. Many big business institutions have adopted it.

Write us for literature. Our engineers are at your service in designing installation.

KAUSTINE CO., Inc., Dept. 1140, Buffalo, N. Y.



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"SANISEP"

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Portable Sewerage Systems

THE perfect System for Mill villages, suburban homes, and schools with or without running water. Made of reinforced concrete with solid bottoms and thoroughly waterproofed. All scavenger work done away with, no chemicals required, flyproof and odorless.

ENDORSED BY ALL HEALTH AUTHORITIES

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VOGEL PATENTED

OVER 250,000 *Giving*

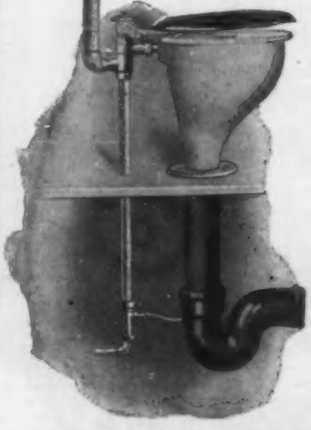
Satisfaction in All Climates.

VOGEL PATENTED

FROST PROOF CLOSETS

They require no pit.
They save water.
All bowls have enameled rims. In service daily, winter and summer.

No. 1.



The ideal water closets for Factories and Mill Villages, where thousands have been installed.

The most durable water closets made — excepting none.

Every Fixture Tested Under Hydraulic Pressure Before Leaving Factory.

INSIST ON GETTING THE VOGEL

For Sale by Jobbers Everywhere.

JOSEPH A. VOGEL CO.

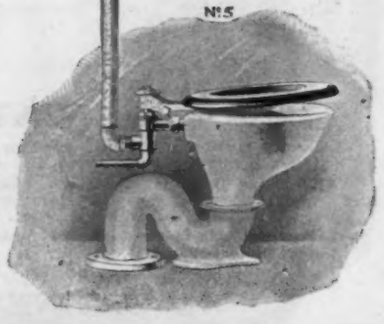
Factory and Office at

WILMINGTON, DEL.

Warehouses at Baltimore, Md., and St. Louis, Mo.

No. 5 FACTORY CLOSET

This fixture fills the demand for a strong and durable automatic water saving closet outfit for factory use. The valve device is extremely simple and repairs, though seldom necessary, can be made by removing the valve cap back of bowl.



Out Door Privies Equal to These

Your filthiest outhouse is quickly changed to the sanitary, fly proof, attractive closet you see in photo, by the use of Stevens Sanitary Closet Cans. In place of the filth or the reeking old bucket or tub, you have a clean, inoffensive barrel-looking thing of steel, its parts connecting in such a way that all organic matter deposited inside must remain inside, hidden from view and absolutely beyond the reach of flies and insects, without the least possibility of soil or water pollution until it is removed for emptying.

Stevens Sanitary Closet Cans

Some Who Use It.

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Aragon Mills, Aragon, Ga.
Fort Mill Mfg. Company, Ft. Mill, S. C.
Dixie Cotton Mills, LaGrange Ga.
Shelby Cotton Mills, Shelby, N. C.
Middleburg Mills Batesburg, S. C.
Howell Mfg. Co., Cherryville, N. C.
Columbia Mills, Columbia, S. C.
Lancaster Cotton Mills, Lancaster, S. C.
Winona Cotton Mills, Winona, Miss.
The Jordan Co., Columbus, Ga.
Eureka Cotton Mills, Chester, S. C.
Athens Woolen Mills, Athens, Tenn.
Lebanon Woolen Mills, Lebanon, Tenn.

As you see in the cut—need no screens or special kind of building and with ordinary care will last for years. They are built of steel, the least expensive and most durable material available, extremely simple in construction and easy to install—are much less costly than any concrete, or concrete and steel affair, that you could possibly buy or put together for your mill closets with good results. They make any old privy sanitary and fly proof, according to verdict of best authorities. Compare the cost of equipment and labor needed to erect the other systems to the cost of Stevens Cans erected in your closets and your answer is "Stevens Cans."

IMPROVE YOUR CLOSETS WITH STEVENS CANS

Before flies return and while the weather permits, improve the sanitary conditions of your mill village by installing Stevens Cans. This is the system for low cost and permanent satisfaction. Textile mills and other industries which have used Stevens Cans in years past now reorder more to carry on this work in new closets which are being built. No evidence can be more positive. The same results are YOURS the moment you install them.

Price each $3.00, F. O. B. Atlanta. Special prices in quantities.

ORDER NOW those you need for the start and take the others when convenient.

THE SELIG COMPANY
MANUFACTURERS

The Selig Co. of Texas
Western Distributor
Dallas, Texas

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Meet me at the Tuller for Value, Service, Home Comforts

New HOTEL TULLER

Detroit, Michigan.

Center of business on Grand Circus Park. Take Woodward car, get off a Adams Avenue.

ABSOLUTELY FIREPROOF

200	Rooms,	Private	Bath,	$1.50	Single,	$2.50	Up Double
200	"	"	"	2.00	"	3.00	" "
100	"	"	"	2.50	"	4.00	" "
100	"	"	"	3.00 to 5.00	"	4.50	" "

Total 600 Outside Rooms.

ALL ABSOLUTELY QUIET

Two Floors—Agents' Sample Rooms

New Unique Cafes and Cabaret Excellente

The House of Taylor

IN THE HEART OF THINGS

400 Baths 600 Rooms

HOTEL MARTINIQUE

Broadway, 32d St., New York

One Block from Pennsylvania Station. Equally Convenient for Amusements, Shopping or Business.

157 Pleasant Rooms, with Private Bath,
$3.00 PER DAY

257 Excellent Rooms, with Private Bath, facing street, southern exposure,
$3.50 PER DAY

Also Attractive Rooms from $2.00.

The Restaurant Prices are Most Moderate.

Hotel Lenox

THE Lenox has long been famed as a hotel where guests are made to feel at home. If you ever visit aristocratic old Boston, make the Lenox your rendevous and you'll enjoy your stay.

It is situated within a short distance of the business, shopping and theatre districts, and is in close proximity to all railroad stations.

Single Room with Bath
$2.50 to $4.00
Double Rooms with bath
$3.50 to $5 00

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A Refined Hotel for Your Mother, Wife and Sister

Rates:
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$1.50, $2.00, $2.50, $3.00
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TO THE

Manufacturer and Distributor

Abundant supplies of coal, coke, iron, timber and other raw materials lie in the regions of Georgia and Alabama which are traversed by the

Central of Georgia Railway

Cheap electric power, numerous undeveloped waterpowers, good home markets and excellent shipping facilities. Therefore, manufacturing conditions are ideal.

Many of the cities on the Central of Georgia Railway occupy advantageous positions for distributing warehouses and a number of the larger northern and eastern manufacturers supply their southeastern trade from branch houses in these cities.

Full and detailed information upon application

J. M. Mallory, Industrial Agent
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The West Point Route

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CHEAPEST RATES

3——Trains Daily——3

Call at City Ticket Office, No. 80 Peachtree Street, or write for fares and full information.

J. P. BILLUPS,

General Passenger Agent, Atlanta, Ga.

Proper Locations for Cotton Mills.

United States Census figures show that since 1880 the consumption of cotton in mills of the cotton growing states has increased 1,502 per cent, as compared with an increase of only 93 per cent in all other states. In the twelve months ended August 31, 1916, Southern mills consumed 675,731 more bales of cotton than the mills of all other states. Three-fourths, or 9,000,000, of the total cotton spindles in the cotton growing States are tributary to Southern Railway tracks. Of the 200 knitting mills in the South over 125 are located along the Southern Railway. All the Southern woolen and silk mills are also on Southern Railway tracks.

There is a reason for this, and it is not difficult to understand.

The Southern Railway Lines enter and serve most completely those portions of the South where the textile industry is the greatest success, because there are found all the conditions which make for successful manufacture —the proper transportation facilities, the ease with which the raw materials and the needed fuel may be secured, the supply of good labor, the pure water, the low cost of power, and favorable local conditions.

Not only for textile plants but for all other industries the best advantages will be found in this territory.

If you have a plant to locate let us take up with you the question of the proper location. Your plans will be held confidential. Our knowledge of conditions at various points and our experience in locating other mills and the time of our agents in making special investigations are at your service, if desired.

M. V. RICHARDS
COMMISSIONER
Room 131
SOUTHERN RAILWAY SYSTEM
Washington, D. C.

Georgia Railroad

EFFICIENT AND RELIABLE

Passenger and Freight Route

Ample Train Service and good connections.

Elegant road bed and superb equipment.

Special Fares for special occasions very often in effect.

Ask the Georgia Railroad Agent for rates and schedules.

J. P. BILLUPS
General Passenger Agent, Atlanta, Ga.

FERTILE LANDS.

Well located and accessible to good highways with splendid railroad facilities may be had for $10.00 per acre and up —all over South Georgia.

The climate and soil greatly favor the vegetable grower over other sections—the growing season is 250 days.

Hogs and cattle can be raised more cheaply in South Georgia than anywhere in the South. The mild winters and native grasses make this possible. Local packing houses offer a permanent dependable market at Chicago prices every day in the year for hogs and beef cattle.

Why pay more when you can purchase "as good" land for $10.00 per acre? South Georgia enjoys the best climate in the South.

Send for list of farms for sale along the A. B. & A. Railroad.

W. W. CROXTON,
General Passenger Agent
A. B. & A. RAILROAD CO.,
613 Austell Bldg.
Atlanta, Ga.

Commission Merchants, Yarn Dealers, Cotton Dealers and Brokers, Etc.

Weimar Bros.

Phone Connections
Works, 2046-48 Amber Street,
PHILADELPHIA, PA.

MANUFACTURERS OF
Cotton Mercerized Tapes, Spool Tapes, Bindings and Narrow Fabrics for Underwear and other Trades.

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COMMISSION MERCHANTS
COTTON AND WORSTED YARNS
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HAVE THAT SAFE FEELING
When buying products advertised in COTTON you can always have that safe feeling that each advertiser is reliable and lives up to the claims made in his advertisement.

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COMMISSION MERCHANTS
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Jackson Company
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HENRY BEER EDGAR H. BRIGHT
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LINEN YARNS
For Weaving, Knitting and all Purposes
TURKEY RED YARNS
For Towel Borders, Towellings and Bleaching Cloth
Linen Jacquard Harness Twine
And Every Description of Linen Thread and Twine
115 Franklin Street, : NEW YORK

Classified Opportunities.

PROPOSALS FOR BLANKETS, DRY GOODS, HATS AND CAPS, etc.—Department of the Interior, Office of Indian Affairs, Washington, D. C., March 29, 1917.—Sealed proposals, plainly marked on the outside of the sealed envelope: "Proposal for dry goods," etc., as the case may be, and addressed to the "Commissioner of Indian Affairs, U. S. Indian Warehouse, 265 East Illinois Street, Chicago, Ill.", will be received until 1 o'clock p. m., of Wednesday, May 2, 1917, and then opened, for furnishing the Indian Service with blankets, dry goods, underwear, hosiery, gloves, suspenders, notions, hats and caps, etc. Schedules giving all necessary information for bidders will be furnished on application to the Indian Office, Washington, D. C., and the U. S. Indian Warehouses at Chicago, St. Louis, and San Francisco. The department reserves the right to reject any and all bids, or any part of any bid. Cato Sells, Commissioner.

SITUATION WANTED—Young man 21 desires to enter textile industry with firm where ability and initiative are necessary qualifications. Has high school with some college education. Two years business experience in bookkeeping, cost-keeping, time-keeping and payrolls. Accurate at figures. Excellent references as to character and ability. Address Box 504 care "COTTON."

OPPORTUNITY is now knocking at the door of the plant needing a high-class chief engineer or master mechanic. A man with unlimited licenses from Massachusetts and marine examiners, as well as first-class navy discharges, thoroughly experienced and equipped to handle steam, electric, turbo-electric or water driven plants in either cotton mill or central station work, desires to make a suitable connection. Fifteen years experience in position of importance and is competent to handle construction or installation work. References furnished. Address Box 18, care COTTON.

POSITION WANTED as superintendent or manager. A man with wide experience, over 20 years in many large Northern mills, desires position, preferably in the South. Experienced on all kinds of plain and fancy goods, cotton, silk, linen, and some wool. Have acted as purchasing agent for a number of concerns and have taken charge of the erection and organization of mills for both fine and coarse yarns, combed and carded. Capable of doing designing where necessary. Familiar with all kinds of machinery and power plants. Very best of references exchanged. Address Box 312, care COTTON.

POSITION WANTED by Georgia mill man as superintendent. Have had 17 years experience on white and colored goods and all kinds of textile machinery. Now employed but desire to change to position where there is chance for promotion. References from several well known mill men. Age 35 and married. Address Box 93, care COTTON.

POSITION WANTED as Overseer of Spinning or Twisting, in some Georgia mill. Have had 13 years experience on all heavy duck, and with Saco-Lowell, H. & B. and other machinery. Good references. Married and 37 years of age. Address Box 97, care COTTON.

RATES:

WITHOUT DISPLAY.

"Positions Wanted" 3 cents per word per insertion. Minimum charge 50 cents. Payable in advance

"Positions Open" and other undisplayed advertisements, 4 cents per word per insertion. Minimum charge $1.00. Payable in advance.

(When replies are to be received in our care, allow four words for box address)

DISPLAYED.

"For Sale" and all other advertisements using bold-face type or otherwise displayed, $2.00 per inch per insertion.

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APINOL

Ideal Surgical Dressing.

Powerful, Safe, Pleasant.

If your druggist cannot supply you write to us.

Send 10 or 25 cents silver for trial bottle.

WHITE CHEMICAL CO.
WILMINGTON, NORTH CAROLINA

CHEESE-CLOTH MANUFACTURERS

should write, indicating their ability to handle orders on 22 x 18 cheese-cloth for a concern using large quantities. Address Box 29, care COTTON.

WANTED
Children's Hosiery.

An inquiry has been received for 1.000 cases of children's ribbed hose in sizes 5 to 10, at a price of 85 cents to 87½ cents a dozen. Any mill in a position to consider a proposition of this character should communicate with Box 28, care COTTON.

FOR SALE

63 Crompton & Knowles looms; 33 inch reed space 4 x 1 box motion. Equipped with Crompton & Knowles, sixteen Harness Double index, two weave multiplier dobbies. Looms are in first class condition and the dobbies are practically new. Will sell for $50.00 each or will consider cash offer for the lot.

Address
HUGHES FAWCETT,
115 Franklin Street, New York

Used Machines For Sale
F. O. B. Atlanta

One 20″ x 12′ Lathe.
One 32″ x 12′ Lathe.
Two 16″ x 10′ Lathe.
One 16″ x 8′ Lathe.
One 24″ Aurora Drill Press with tapping attachment.
One new 1½″ Single Head Landis Bolt Cutter.
New Marvel Power Hack Saws in stock for immediate delivery.
We can equip you in either new or used machinery. Write us.

Seeger-Walraven Company
Machinery and Mill Supplies.
38 W. Alabama St., Atlanta, Ga.

New and Second Hand

ENGINES
Corliss Automatic and Slide Valve

BOILERS
Pumps, Hoisting Engines, Gas and Gasoline Engines.

MACHINE TOOLS
Lathes, Planers, Shapers, Drill Presses, etc.

WOOD WORKING
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ELEC. MACHINERY
Dynamos and Motors

AND SUPPLIES OF ALL KINDS

FRANK TOOMEY, Inc.,
127-31 N. Third St.
Philadelphia, - Pennsylvania

Starch

Modified Starch

Are you making eighty-squares, poplins or similar goods? We have just completed some work in a mill making poplins with the following results: the breaking strength of the regular goods was 69.8 pounds; the breaking strength of the goods made from warp sized with modified starch was 80.5 pounds. The weaving was very much improved and the number of broken ends per loom was reduced nearly fifty per cent.

We are prepared to show you how to obtain the same results in your mill.

Corn Products Refining Co.

New York.

Southern Office, *Greenville, S. C.*

Starch

VICTOR MILL STARCH

The Weaver's Friend

It boils thin—penetrates the warps—increases breaking strength and carries the weight into the cloth. Being thoroughly washed free of gluten and other foreign matter it gives a bleach and finish to the goods that you can get from no other starch.

A trial order will convince you that VICTOR STARCH has no equal on the market.

THE KEEVER STARCH COMPANY, Columbus, Ohio

Southern Agent: MR. JAS. H. MAXWELL, Greenville, S. C.

If you are not already using VICTOR STARCH call on our representative for a demonstration at your convenience.

Liquid Chlorine

Cylinder with Cap Off. Height 54 inches.

Advantages of Liquid Chlorine as a Bleaching Agent

(1) The bleaching solution is very easily and simply prepared, necessitating little or no attention or labor.

(2) Its use does away completely with the very disagreeable features accompanying the preparation of solutions of chloride of lime.

(3) There is no settling of the solution required as with chloride of lime, and consequently no disagreeable sludge to get rid of.

(4) In the preparation of chloride of lime solutions there is always a great deal of "fly" or fine dust of the chemic which often causes serious trouble by injuring goods in the mill on which it settles. The use of Liquid Chlorine avoids all such injury.

(5) The bleaching value of the chlorine is fully utilized with Liquid Chlorine, whereas with bleaching powder, it is impossible to obtain all of the "available" chlorine from the dry powder in the solution. A good quality of bleaching powder contains 36 per cent. of "available" chlorine, but under the best conditions of preparing the solution it will only be possible to obtain in the solution 29 per cent. of "available" chlorine, the remaining seven per cent. being lost in the sludge, etc. Most mills, in fact, do not obtain as high a percentage as this, but only from 20 to 25 per cent. Liquid Chlorine is a 100 per cent. "available" chlorine, and there is absolutely no loss in the preparation of the bleaching solution.

(6) By the use of Liquid Chlorine no insoluble lime compounds are introduced into the goods. Where solutions of chloride of lime are employed for bleaching, there is always left in the goods a contamination of insoluble lime compounds which are exceedingly difficult to remove even by repeated washing and souring. These lime compounds are liable to cause tendering and discoloration of the goods after a time, and hence it becomes the especial care of the bleacher to see that this defect is reduced as far as possible. All such troubles as these are avoided by the use of Liquid Chlorine, as all of the products from the bleaching solution are perfectly and easily soluble and so are readily removed from the goods by a simple washing. The only compound which is eventually formed from the bleaching liquor when its bleaching effect is finished is sodium chloride, or common salt. When sulphuric acid or sodium bisulphate is employed for souring, there is also formed some sodium sulphate or Glauber's salt. Both of these compounds are very soluble and are furthermore perfectly harmless to the fibre. Chemical analyses of identical cotton goods, bleached in mills formerly using chloride of lime and now employing Liquid Chlorine, show the following comparison of mineral matter left in the bleached goods under the best conditions of bleaching:

Insoluble mineral matter in cloth bleached with chloride of lime	0.15% to 0.25%
In cloth bleached with Liquid Chlorine	0.03% to 0.06%

(7) There is a positive increase observed in the tensile strength of goods when bleached with Liquid Chlorine as compared with same goods bleached with solutions of chloride of lime. Several of the largest bleacheries in the United States have reported an increase of 6 to 10 per cent. in the tensile strength of goods bleached with Liquid Chlorine.

(8) The use of Liquid Chlorine minimizes the danger of the formation of oxycellulose in either cotton or linen bleaching. It is almost impossible to totally avoid the formation of oxycellulose when bleaching with solutions of chloride of lime, as this chemic causes a partial decomposition of the cellulose of cotton and linen, resulting in a breaking down of the fibre cell and a consequent loss in strength to the fibre. One of the largest bleacheries in America has carefully studied the formation of oxycellulose when bleaching with chloride of lime and with Liquid Chlorine, and have adopted the latter process of bleaching on account of the uniformly higher quality of the bleached goods.

(9) Yarns and cloth bleached with Liquid Chlorine are much softer in "feel" than when bleached with chloride of lime, as it is well known that lime has the effect of making the fibre harsh. This increased softness is of great advantage to the finisher in producing a desirable "handle" to his goods.

(10) When using Liquid Chlorine for bleaching less acid (or sour) is required than for bleaching powder. This both tends to keep the goods softer and also greatly reduces the liability to tendering. It also results in a larger saving in the amount of wash water required.

(11) It is well known that chloride of lime is quite variable in its strength, whereas Liquid Chlorine is a product of absolute uniformity, its strength not being affected by length of storage or weather conditions.

(12) Chemic solutions prepared from Liquid Chlorine are especially adapted to the bleaching of cotton goods containing colored stripes or pattern effects. Even with the fastest colors available solutions of chloride of lime have to be used with great care, and bleaching by this means nearly always causes some bleeding of the color if a good white is required in the body of the fabric. By the use of solutions of Liquid Chlorine it has been found that a fine, clear white can be obtained with a minimum danger of the colors bleeding or being stripped.

It has been amply demonstrated in comparative trials under actual mill conditions and on a large scale, that where a bleach of high quality is desired with reference to clearness of color, freedom from deleterious substances, convenience and simplicity of operation, highest efficiency of bleaching agent, and possibility of scientific accuracy and control in the methods of bleaching, the use of Liquid Chlorine is a step far in advance of the crude methods where chloride of lime is employed.

Our representatives will gladly demonstrate Liquid Chlorine in your mill.
Be sure to write today for our interesting booklet. It's free. Just drop a post card.

ELECTRO BLEACHING GAS CO., General Offices 18 E. 41st St. **New York City, N. Y.**

Make Your Bleach Out of Salt Water

WE manufacture a number of different types of cells for this purpose. All you require besides this is direct current of electricity and salt water.

Write for additional information.

Electro Chemical Company,

Formerly

National Laundry Machinery Co.

Dayton, Ohio, U.S.A.

B. & L.

Anti-Chlorine Bleaching Process

FOR COTTON

Simple

Scientific

Safe

BOSSON & LANE

Works and Office, Atlantic, Mass.

KALI HYDROXY OIL

AMERICAN MADE

A Clear Solution in Hot or Cold Water. Makes No Emulsion.

For Softening Finishing and Use in Dye Bath

KMC TRADE MARK KALI

Alizarine Assistant

Boiling Out Cotton Goods, Etc.

Manufactured by

KALI MANUFACTURING CO., 1406-08-10 N. Front St. PHILADELPHIA

Manufacturers of Kali Chlorine Neutralizer to prevent under Bleached Goods

Kali Sulphantine to prevent tendering of Goods Dyed with Sulphur Colors

Aniline Dyes
Dyewood Extracts
AND ALL
Textile Chemicals

Baltic Chemical Co.

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Works: YONKERS, N. Y.

MADE IN U. S. A.

SOLUBILITY BRILLIANCY

HOLLAND ANILINE CO.
SALES OFFICES AND WORKS,
HOLLAND, MICH.

METHYL VIOLET B
METHYLENE BLUE BB
BISMARK BROWN Y and R
BLUE B, BB, R, RR
SULPHOBISTRE EX. CONC.

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Caustic Soda	Cocoanut Oil
Soda Ash	Olive Oil
Caustic Potash	Olive Oil Foots
Aniline Oil	Palm Oil
Carbonate of Potash	Soya Bean Oil
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BETA NAPHTHOL
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LAKE SCARLET
LAKE ORANGE
BISMARCK BROWN
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WOOL YELLOW
CHRYSOIDINE
SODIUM ACETATE
FUR DYES.

SAP TRADE MARK REGISTERED MADE IN AMERICA

Other cotton colors in preparation

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Established 1870.

The Warren Soap Manufacturing Co.

77 Summer St., Boston, Mass.

Manufacturers of Textile Soaps *used* and *endorsed* by the leading Cotton, Woolen, Worsted and Silk Mills in the United States.

The Parsons-Barr Co.

Charlotte, N. C.
Southern Agents.

AMERICAN DYES FOR AMERICAN DYERS

DYES and CHEMICALS

THE NEW QUICK ACTING

"CHROMOSOL" COTTON MORDANT

FOR USE WITH EXTRACT COLORS

KHAKI FOR COTTON

MARDEN, ORTH & HASTINGS CO., Inc.

(Established 1837)

BOSTON, 225 Purchase St.
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National Aniline & Chemical Co.

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MANUFACTURERS OF

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IMPORTERS OF

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COLORS EXTRACTS
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Main Office:
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THE CHEMICAL COMPANY OF AMERICA, INC.
MANUFACTURERS OF
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and
MILL SUPPLIES
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FORMEN
TRADING CO.
Dyewood Extracts,
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Everything for the Trade
NEW YORK
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JACQUES WOLF & CO., Passaic, N. J.
Sizings and Finishing Products for Cotton, Wool and Silk. All Sulphonated Castor Oils.
MONOPOLE OIL. U. S. Patent No. 861397.
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GUMMED TAPE AND MOISTENING MACHINES
ESPECIALLY PREPARED FOR
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ALL OTHER CHEMICALS
BICHROMATE OF SODA
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CITRIC ACID
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For Forty Five Years

The Leading Distributors of Dye Stuffs, Chemicals, Sulphonated Oils, especially adapted for the Textile Industry.

Send for Book of Specialties

A. Klipstein & Company, New York City

Southern Office: Charlotte, N. C.

Indigo Extract
Natural Indigo

For Cotton and Wool Dyeing.

DYESTUFFS and CHEMICALS

Write for samples and prices

James C. Gismond & Co., Inc.

97 Water St., New York.

DELAHUNTY DYEING MACHINE COMPANY

ESTABLISHED 1880

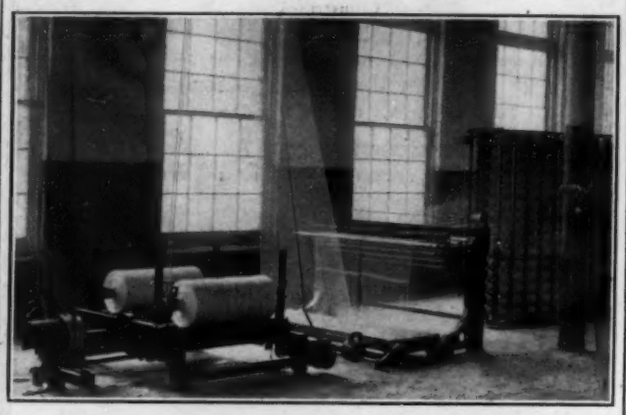
Manufacturers of Textile and Mining Machinery

Revolving Cylinder Raw Stock Dyeing and Bleaching Machines
Revolving Cylinder Hosiery Dyeing and Bleaching Machines
Hosiery, Oxidizing, and Tom Tom Machines.
Circulating Type Raw Stock Dyeing and Bleaching Machines
Circulating Type Beam Dyeing Machines for Dyeing
Cotton Warp on Beams, 1 to 12 Beams in One Operation

Special Machines for Aniline, Sulphur, Indigo, and Other Vat Colors

OFFICE AND WORKS, PITTSTON, PA., U. S. A.

COCKER
BALL WARPING MACHINE



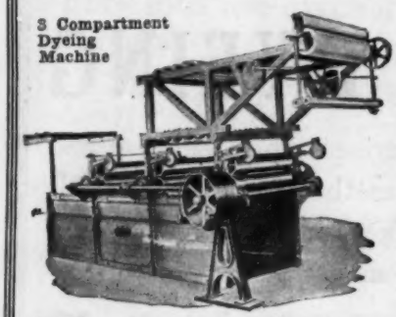
THIS ball warper contains improvements in design and construction which makes it the most efficient machine of its kind to be had.

Whatever your finishing process or material, it will pay you to find out the special advantages offered by the line of Cocker Warping, Reaming, Warp Dyeing and Warp Sizing Machinery.

Write today for full information and prices.

Cocker Machine & Foundry Co.
Builders of Warpers, Reamers and Warp Dyeing Machinery
GASTONIA, N. C.

3 Compartment Dyeing Machine



THIS MACHINE is built for dyeing chain warps, piece goods, bleaching warps in continuous process, for boiling-out, or boiling-out and dyeing combined. Our machines are not surpassed in design, workmanship and material. They are used in some of the greatest mills. Our location makes for economy in production and herefore low cost. Bulletin on request.

SALEM IRON WORKS
1326 So. Liberty St., Winston-Salem, N. C.

THE BAYER COMPANY, INC.

117 Hudson Street, NEW YORK
Manufacturers and Importers of
Aniline, Alizarine and Algol Colors

SPECIALTIES—For Cotton Khaki (Government Work) ALGOL Colors, also Direct and Sulphur Colors.

Importers of the Products Manufactured by

FARBENFABRIKEN VORMALS FRIEDR. BAYER & CO.
Leverkusen, near Cologne on Rhine, Germany.

BUTTERWORTH

Ninety-seven years' experience in making finishing machinery can be offered you by this firm alone. In solving problems relating to bleaching, washing, calendering and other finishing processes our skill, knowledge and services are freely at your disposal, whether you need new machinery or not.

Write for catalog stating fabric and finishing required

H. W. BUTTERWORTH & SONS CO.

Established 1820

PHILADELPHIA

PROVIDENCE OFFICE
Turk's Head Building

FINISHING
Butterworth
MACHINERY

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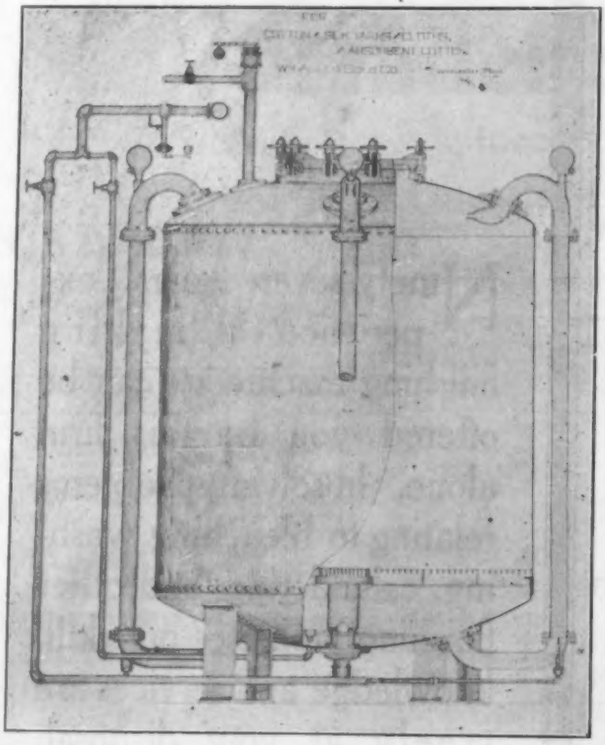
FINISHING MACHINERY

ALLEN PATENT KIERS



"Allen" Injector Kier
As illustrated.
"Allen Worcester" Kier
Electric Driven Circulator and Indirect Heater.
"Allen Hydraulic" Kier
For Raw Stock. Unloaded in 30 minutes.

The following is an extract from letter from a large mill that recently installed **"Worcester" Kiers.**

"We note that in the new type kiers the liquor can be brought to a boiling point very much quicker than in the old type, thereby saving considerable time in the boil-off."

This new kier is mechanically correct, no live steam is admitted to the kier.

Absolutely uniform results are secured with less consumption of steam.

Let us show you how you can improve on your present system. Write us.

Logwood Extractor for Extracting the Coloring Matter from Logwood Chips.

Worcester Steam Boiler Works
Wm. Allen Sons Co., Prop.
Worcester, Massachusetts

TOLHURST SELF-BALANCING EXTRACTOR

Patented adjustable idlers permit of Countershaft, Engine or Motor drive.

Ask for catalogue.

Tolhurst Machine Works
TROY, N. Y.

Sou. Agt. - - Fred H. White, Realty Bldg., Charlotte, N. C.
West. Rep. - - John S. Gage, Hartford Bldg., Chicago. Ill.
N. Y. Rep., - - Fred A. Tolhurst, 106 Central Park W. N. Y. C.
Canadian Agt., - W. J. Westaway, Sun Life Bldg., Hamilton, Ont.

BEAM DYEING

That beam dyeing is the most efficient and most economical method for weaving mills is proven in the fact that nearly all dyeing machine improvements are in that direction.

The Morton Beam Dyeing Machine was first and has the largest number of satisfied users.

Recent improvements of The Morton Beam Dyeing Machine have perfected the beam dyeing process.

Complete information about beam dyeing and The Morton Beam Dyeing Machine will be furnished on request.

Columbus Truck & Supply Mfg. Co.
Columbus, Ga.

American Service Follows The American Extractor

Every American Extractor that goes into use gives its owner satisfaction.

There is a large, capable and perfectly equipped organization whose business it is to see that it performs perfectly.

American extractors are designed and built with scientific insight and minute care in detail, to meet the conditions under which they will be operated.

The metals used, resist the acid conditions prevailing in the mill. Perfect balance enables the extractor to start easily without strain on the motor. The motors are especially designed to drive extractors.

American Extractors may be had in all sizes, over or under driven, by belt or motor drive.

They are least expensive in the long run. Ask us for references.

The American Laundry Machinery Company

Specialty Department.

CINCINNATI, OHIO

H. G. Mayer, Southern Textile Agent, Realty Building, Charlotte, N. C.

"Proctor" Truck Yarn Dryer

"Proctor" Dryers do perfect work at minimum cost, because they are designed for your particular needs by the oldest makers of dryers in America and are made in a factory devoted solely to dryers.

Illustrated Catalog on request.

The Philadelphia Textile Machinery Company

Philadelphia

Providence, R. I. Howard Building

Chicago, Ill. Lytton Building

Charlotte, N. C. H. G. Mayer—Realty Building

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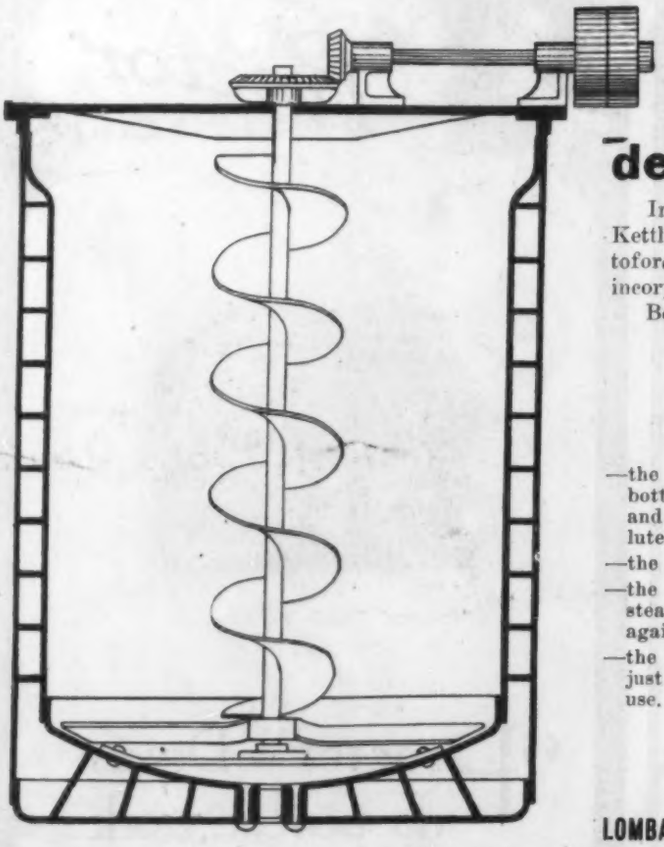


Keep Your Size Absolutely Uniform for Indefinitely Long Periods.

In designing this new Lombard Steam Jacketed Size-Kettle, we have eliminated the objectionable features heretofore encountered with kettles of this character, and have incorporated new features not found in any other.

Below are given a few of the many advantages of the

"LOMBARD"
STEAM JACKETED
SIZE KETTLES

—the spiral conveyor and the knife paddle located at the bottom of the kettle keeps the size in constant circulation, and a uniform temperature and thickness is assured absolutely.

—the knife paddle at the bottom prevents caking.

—the steam is never wasted, as after passing through the steam jacket it is returned to the boiler to be used over again. All condensation is eliminated.

—the size can be kept in the kettle over night, and still be just as good as ever for the next day's or preceding days' use.

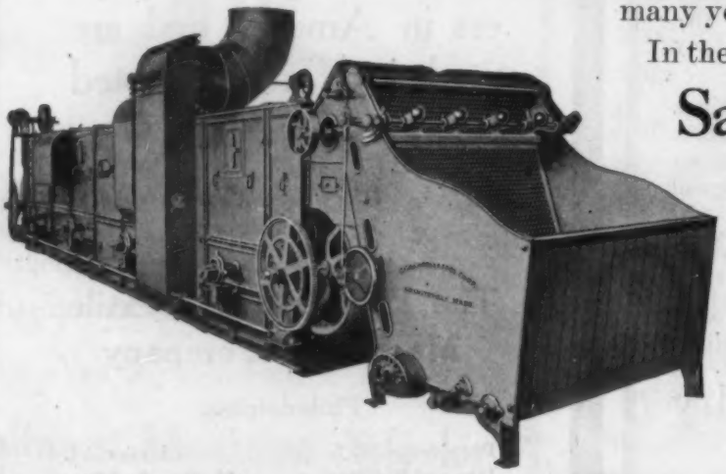
For economy in size, time and steam, use the Lombard Size Kettle.

Write today for full information.

LOMBARD IRON WORKS & SUPPLY COMPANY, AUGUSTA, GA.

SARGENT DRYERS mark progress in Dryer Development comparable to that made in other fields of mechanical endeavor.

They are favored with a natural preference because they are designed on basic principles of air circulation, conveying, and general drying apparatus construction, which have had the approval of discriminating mill men and drying engineers for many years.



In the

Sargent Dryer

these principles have been combined and refined, making a complete machine which is unexcelled.

For drying cotton, linters, wool, hair, flax and other classes of raw material.

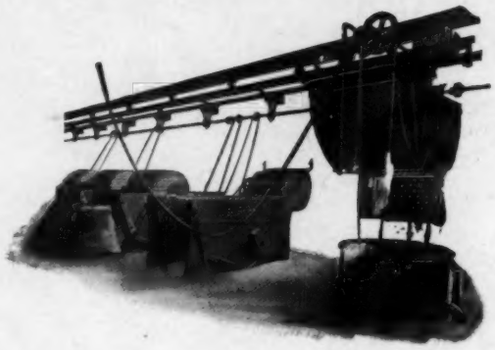
C. G. SARGENT SONS Corp., GRANITEVILLE, MASS.

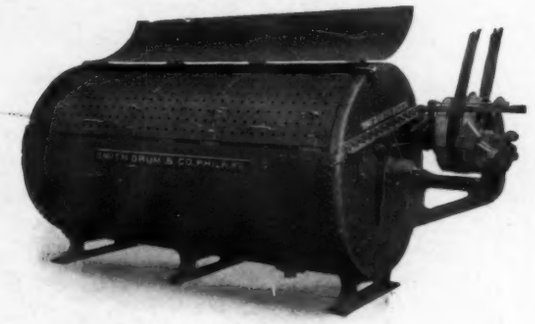
FRED H. WHITE, Southern Agent, Charlotte, N. C.

Sulphur Black Dyeing Machines

Capacities from 50 to 500 lbs. per batch.

CIRCULATING AND ROTARY TYPES





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BUILDERS OF "THE BEST" LABOR SAVING DEVICES

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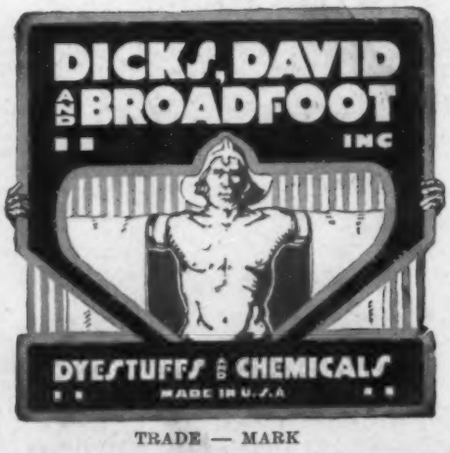

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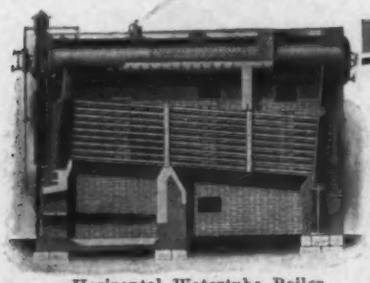
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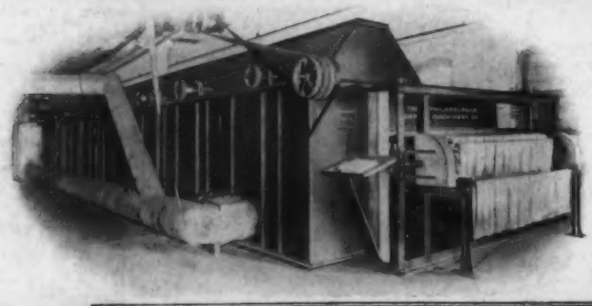

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